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Alaska Department of Fish and Game
Division of Commercial Fisheries
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Abundance, Age, Sex, and Size of Sockeye Salmon Catches and Escapements in Southeast Alaska in 1987

by
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and
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State of Alaska Steve Cowper, Governor

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ABSTRACT

Catch statistics and spawning escapement estimates for sockeye salmon (*Oncorhynchus nerka Walbaum*) in Southeast Alaska in 1987 are summarized. A total of 1,117,380 sockeye salmon were commercially harvested of which approximately 52% came from northern Southeast Alaska waters (Districts 109 - 191), excluding inshore districts near Yakutat. The drift gill net and purse seine fleets harvested the vast majority of sockeye salmon, 67% and 27%, respectively. Gill net catches were highest in District 115, where 415,815 sockeye salmon were taken. Purse seine catches were highest in District 104, where 171,214 fish were harvested. Small numbers of sockeye salmon were also taken in commercial fish trap and troll fisheries, in Canadian commercial gill net and subsistence fisheries on the Taku and Stikine Rivers, and by sport and subsistence fishermen. Five-year-old sockeye salmon (1982 brood year) were the dominant year class taken by the gill net and purse seine fleets, although four- and six-year-old (1983 and 1981 brood years) fish contributed substantially to harvests in most districts. Large shifts in the age composition of the catches over time were apparent in both the gill net and purse seine fisheries. Females were generally shorter in length than males within specific age classes. The average weight of fish in the northern districts was greater than that observed in the southern districts. Differences in migratory timing were observed across districts and age classes in some fisheries. Spawning escapement estimates are listed for all sockeye salmon spawning systems in the region in which at least 25 fish were seen. The contribution of the 1982 brood year predominated in 76% of the combined 45 escapement collections. Contributions of the 1983 brood year to escapements were also important for many systems. Migratory timing of sockeye salmon through the 15 weirs in the region was highly variable, differing between stocks both in the mean date of return and standard deviation of mean date.

KEY WORDS: Sockeye salmon; catch and escapement; age, sex, and size; Southeast Alaska; migratory timing

INTRODUCTION

Commercial harvests of sockeye salmon (*Oncorhynchus nerka*) began in the 1880's in Southeast Alaska. Catches peaked early in the history of the fishery, averaging 2.1 million sockeye salmon annually between 1896 and 1920 (Eggers and Dean 1987). Several periods of sharp declines in catches in the region were experienced over the next 30 years. From 1951 through 1980 catches remained fairly stable, averaging 803,000 fish annually. Catches have sharply increased over the last 6 years (1981 - 1986), averaging almost 1.3 million fish.

Six types of gear are used to harvest sockeye salmon in Southeast Alaska. Commercial purse seine and gill net fleets currently account for the vast majority of the harvest. Lesser numbers of fish are harvested commercially with fish traps and in the troll fishery. Almost without exception these fisheries harvest mixed stocks and species. Sockeye salmon are also harvested in subsistence and sport fisheries in Southeast Alaska, and although these catches are minor when compared to commercial harvests, exploitation rates are often high on individual stocks. Canadian commercial gill net fisheries have operated in the Canadian reaches of the Stikine and Taku Rivers since 1979. More than 100 systems (rivers or streams and their associated lakes) are known to produce sockeye salmon in Southeast Alaska.

Estimation of basic population attributes are essential to sound management. Age composition provides the basic data for age-specific stock contribution estimates, brood year returns, and exploitation rates. Size data can be used to monitor growth parameters, environmental variability, and gear selectivity. Migratory timing data can be used to identify interannual shifts in run timing. A comprehensive sampling program to estimate population attributes of sockeye salmon in Southeast Alaska has been implemented since 1982 (McGregor 1983; McGregor et al. 1984; McGregor and McPherson 1986; McPherson and McGregor 1986; McGregor and Van Alen 1987; McPherson et al. 1988a, 1988b).

The study area consists of outside coastal waters of Southeast Alaska extending south from Cape Suckling to Cape Fairweather and both inside and outside waters extending south from Cape Fairweather to Dixon Entrance (Figure 1). The area is divided into eighteen coastal districts (101 through 116, and 182 and 183) and six offshore districts (152, 154, 156, 157, 181, and 189). Inshore district net fisheries and escapements in the Yakutat Management Area are reported elsewhere (K. Pahlke, Alaska Department of Fish and Game, Division of Commercial Fisheries, Douglas, personal communication).

Commercial, sport, and subsistence fisheries operate throughout the region. In 1987 commercial gill net harvests of salmon occurred in Districts 101, 102, 106, 108, 111, and 115. Canadian gill net fisheries operated in the lower Canadian portions of the Taku and Stikine Rivers and on the upper Stikine River. Purse seine fisheries harvested sockeye salmon in Districts 101-107, 109, and 112-114 in 1987. The troll fleet operated throughout the region. The Metlakatla Indian Community operated gill net, purse seine, and troll fisheries within 3,000 ft of the Annette Island shoreline in District 101 (Subdistricts 24, 26, 28, and 42), as well as a small floating fish

trap fishery in Subdistrict 28. Sport fishing occurred throughout Southeast Alaska, primarily near population centers in the region. Subsistence fishing was allowed at many sites in Southeast Alaska, primarily near the mouths of rivers and streams.

The purpose of this investigation was to develop pertinent data on the numbers, age, sex, and size composition of sockeye salmon in the harvest and escapement in Southeast Alaska in 1987 for present and future management and research consideration.

METHODS

Abundance Data

Alaskan commercial catch data presented in this report were compiled by the Division of Commercial Fisheries, Alaska Department of Fish and Game (ADF&G), and originated from individual fish tickets tabulated as of 15 March, 1988. Catch data were edited for data entry and recording errors. Because embedded errors are sometimes found at a later date, data file listings in the future may show minor differences from those given in this report. Catch data for Canadian commercial and subsistence fisheries on the upper Taku and Stikine Rivers were obtained from the Canadian Department of Fisheries and Oceans (S. Johnston, personal communication). Catches were assigned to a statistical week, which begins at 00:01 AM each Sunday and ends the following Saturday at midnight. Statistical weeks are numbered sequentially beginning with the week encompassing the first Sunday in January. Inclusive dates for 1987 are shown in Appendix A.1.

Several methods were used to estimate total escapements to Southeast Alaska systems in 1987. Eleven Alaskan systems and four Canadian systems were weired, providing total counts of sockeye salmon to these systems. A mark-recapture tagging program was used to estimate the total Taku River escapement (McGregor and Clark 1988). Sockeye salmon were captured in fish wheels at Canyon Island (5 k from the Canadian border) and tagged. Tagged fish were recovered in the upstream Canadian commercial gill net fishery, and tagged to untagged ratios were used to derive an escapement estimate using the methods of Chapman and Junge (1956) and Darroch (1961). An estimate of escapement for McDonald Lake was provided by Haddix (ADF&G, F.R.E.D. Division, Ketchikan, personal communication). Foot survey counts were made and expanded to a total estimate based on correlations between stream life, foot survey data, and final weir counts in previous years. The estimated escapement to the Stikine River was developed using catch and CPUE data from commercial and test fisheries, and stock composition estimates from scale pattern analyses (Sands, N.J., ADF&G, Commercial Fisheries Division, Douglas, personal communication). Aerial, foot, and boat surveys provided the maximum daily escapement counts for most of the other important sockeye salmon systems in the region; these counts should only be considered partial or relative indicators of escapement magnitude as they do not represent total escapements.

Age, Sex, and Length Data

Sockeye salmon were sampled for scales, sex, and length. Scales were taken from the 'preferred area' of the fish (INPFC 1963). Scales were mounted on gummed cards and impressions made in cellulose acetate (Clutter and Whitesel 1956).

Examination of scales provided age information for individual fish. Scales were magnified to 70X on a microfiche reader and ages were recorded in European notation (numerals preceding the decimal refer to the numbers of freshwater annuli, numerals following the decimal are the numbers of marine annuli, and the total age is the sum of these two numbers plus one). Sex determination was based on examination of either gonads or external morphological features such as kipe development, belly shape, trunk depth, and jaw shape. Accuracy of sex determination was evaluated by examining 4,923 sockeye salmon from commercial catches throughout the region and season (K. Pahlke, ADF&G, Commercial Fisheries Division, Douglas, personal communication). Fish were first sexed and then verified by slitting the belly cavity to examine gonads. Accuracy was 94% for the entire sample.

Fish length was measured from the middle of the eye to the fork of the tail and was recorded to the nearest 5 mm, except that post-orbit to hypural plate measurements were taken for escapements to the Nakina River, Kuthai Lake, Little Trapper Lake, Little Tatsamenie Lake, and the Hackett River in the Taku River drainage, and the Iskut River and Tahltan Lake in the Stikine River drainage. The lengths from the Taku River were converted to middle of the eye to fork of the tail (MEF) measurements according to the following equation developed from lengths taken from 200 sockeye salmon commercially caught in the Canadian commercial fishery on the Taku River in 1987:

$$MEF = 1.090854*(POH) + 20.10672 \text{ mm} \qquad (1)$$

where: MEF = mid-eye to fork of tail and

POH = post-orbit to hypural plate.

The lengths from the Stikine River were converted to MEF measurements according to equation (2) which is one of seven length relationships developed from 820 sockeye salmon commercially caught in Southeast Alaska in 1985 (Pahlke 1988).

$$MEF = 1.103696*(POH) + 19.50277 \qquad (2)$$

All districts in which gill net catches occurred were sampled except the Annette Island portion of District 101. Purse seine catches were sampled in all districts that recorded catches, except in the Annette Island subdistricts of District 101. Fish trap, sport fish, and subsistence harvests have not been sampled because of the small magnitude of the harvests and the logistic difficulties involved in obtaining samples. Escapement samples were collected either in weir traps or by dip nets, beach seining and carcass sampling. Fish wheels were used to collect the

Taku River escapement samples. The variety of collection methods used to sample escapements may introduce some bias into age composition estimates.

Age and sex compositions of salmon in the catches were computed for each fishery sampled. Sampling goals were to collect sufficient samples to estimate the proportion of each age class to within ±5 percentage points 90% of the time in each stratum based on the standard binomial formulae (Cochran 1977) (Appendix A.2). A general goal of 700 fish per week (560 to be ageable) was met each week in the majority of the major districts. Sampling was structured by subdistricts in Districts 106 and 113 because catches were made in widely separated geographic areas and at different times of the season.

Age and sex compositions of the salmon were also computed for each escapement that was sampled. Most escapements were sampled over short periods of time, and these data are pooled into a single stratum. Some escapements were large enough (e.g., Naha River) to facilitate stratification by time to reflect more than one sampling period. This enabled temporal trends in age composition to be analyzed.

Totals from each sample period were summed to represent the age and sex composition over the entire season for each fishery and each escapement having accurate abundance data. When only partial escapement counts were available, a percentage breakdown of each sample by age and sex was tabulated. Standard errors of the age class proportions were calculated by standard binomial formulae and standard errors for estimates expanded to abundance data were calculated to reflect finite population size (Cochran 1977). The age distribution and associated standard errors for the total commercial catch or escapement were estimated by weighting the sample age distribution and its standard error for each sampling period by the total commercial catch (or escapement) during the same sample period.

For each fishery and escapement having length data, mean lengths and their standard errors were calculated for each sex and age class within sampling periods. Sampling goals from the catch were to collect sufficient numbers from each stratum in order to estimate the average length of each major (greater than 10% of the catch) age class to within ±5 percentage points 90% of the time. A general sampling goal of 130 lengths per week was established for all districts, except in the District 111 and 115 gill net fisheries where stock-specific length composition estimates were desired. Unweighted mean length and standard error for the entire season was calculated for each age class by summing samples over all time periods within each age class.

Average weight data was obtained from the ADF&G fish ticket reporting system and is calculated by dividing the total pounds reported by the total number of fish reported.

Migratory Timing

Migratory timing (abundance as a function of time) is the driving force behind management decisions which selectively regulate time and areas open

to fishing. Sockeye salmon migratory timing statistics for weired escapements and major net fisheries provided an index of relative timing.

The means and variances of migratory timing and associated migratory time density functions of sockeye salmon for weired escapements were derived by age and in total for fisheries with stratified age compositions using methodology described by Mundy (1979, 1982). The empirical migratory time density is defined to be the time series of daily proportions, P_t:

where: $$P_t = n_t/N \qquad (3)$$

n_t = abundance during time interval t and

N = total annual abundance.

For a migration over a space of m days, the mean of t is estimated:

$$\hat{t} = \sum_{t=1}^{m} t\ P_t \qquad (4)$$

and its standard deviation is estimated:

$$\hat{S}_t^2 = \sum_{t=1}^{m} (t - t)^2 P_t \qquad (5)$$

The mean time of arrival (t) for weired escapements is expressed in days (central day), while for catches it is expressed in weeks (central week, based on statistical weeks). Catch, rather than CPUE, was used as the index of abundance because catchability is variable in the net fisheries of Southeast Alaska, exploitation is often greater than 70%, and CPUE calculation is not accurate under our present reporting system. Run time estimates which are dependent on catch (or CPUE) are influenced in part by management decisions.

RESULTS AND DISCUSSION

Harvest Data

Numbers of Fish

A total of 1,117,380 sockeye salmon was commercially harvested in Southeast Alaska in 1987 (Table 1), approximately 200,000 fish less than the average for the 6-year period from 1981 to 1986. Approximately 52% of the catch (577,335 fish) came from northern Southeast Alaska waters (Districts 109 - 191; Table 2). More than 100,000 sockeye salmon were harvested in the Southeast Region in each of 5 consecutive weeks, between 12 July and 15 August. Catches peaked during the week of 2 - 8 August, when 256,779 fish were harvested. Over the entire season, more sockeye salmon were taken in District 115 (415,825) than in any other district. Large catches were also taken in District 101 (206,323 fish including catches made in the Annette Island Fishery Reserve), District 104 (172,797 fish), and in District 106 (139,255 fish).

Commercial Gill Net Catch. Gill net fisheries harvested the majority of sockeye salmon taken commercially in Southeast Alaska in 1987, as was the case in 1984 through 1986 (McGregor and McPherson 1986; McPherson and McGregor 1986; McPherson et al. 1988a). A total of 783,899 sockeye salmon were harvested with gill nets in 1987, representing 67% of the sockeye salmon taken in the region (Table 1). The largest gill net harvest occurred in District 115, where 415,815 sockeye salmon were harvested (Table 3). This represents the fourth largest catch from this district since 1959 (ADF&G 1988).

Results of scale pattern analysis (SPA) indicate that fish caught in District 115 bound for Chilkoot Lake represented approximately 78% of the total commercial catch in the district, and that catches of both Chilkoot and Chilkat Lake sockeye salmon peaked during the week of 2 to 8 August (S. McPherson, ADF&G, Commercial Fisheries Division, Douglas, personal communication). The catch of 101,627 sockeye during the period 2 to 8 August represents the highest weekly catch ever recorded in the district. Chilkoot Lake experienced a strong return and Chilkat Lake a weak return in 1987. Exploitation rates for Chilkoot Lake and Chilkat Lake stocks were 0.78 and 0.59, respectively. Mean statistical weeks of harvest indicate that the 1987 returns from both systems exhibited average timing.

A total of 154,992 sockeye salmon were harvested in District 101. Approximately 31% of the catch (47,412 fish) was taken in the Annette Island Fishery Reserve. The District 101 gill net fisheries target on mixed stocks from both Alaska and Canada. SPA results indicate that approximately 77% of the 1987 harvest (excluding the Annette Island Fishery Reserve catches) was destined for the Nass and Skeena Rivers in northern British Columbia (G. Oliver, ADF&G, Commercial Fisheries Division, Douglas, personal communication). Nass/Skeena stock contributions in this district have averaged 72% for the years 1982 to 1986.

The District 106 gill net harvest totaled 136,437 sockeye salmon. Weekly catches of over 20,000 fish were recorded for five consecutive weeks from 5 July to 8 August in District 106. Fish harvested in this fishery have been shown to be bound for local systems such as the Stikine River and numerous mainland and island lakes in Southeast Alaska, as well as to the Nass and Skeena Rivers of northern British Columbia. Based on SPA, approximately 73% of the harvest in Clarence Strait (Subdistrict 106-30) and approximately 66% of the harvest in Sumner Strait (Subdistrict 106-41) were fish bound for spawning systems in Alaska in 1987, according to Jensen and Frank (*In press*).

The District 111 drift gill net fleet harvested a total of 75,035 sockeye salmon in 1987. Weekly catches in excess of 13,000 fish occurred in 3 consecutive weeks from 12 July to 1 August. McGregor (ADF&G, Commercial Fisheries Division, Douglas, personal communication) found, using SPA, that 72% of the District 111 catch was comprised of Taku River stocks (38% for Mainstem Taku River, 23% for Little Trapper Lake, 8% for Kuthai Lake, and 3% for Tatsamenie Lake). Port Snettisham stocks comprised the remainder of the catch (16% Crescent Lake, 12% Speel Lake).

Small catches of sockeye salmon were recorded in District 108 (1,620 fish). District 108 was closed for much of the season to protect the Stikine River sockeye salmon return.

Commercial Purse Seine Catch. Purse seine fisheries harvested 311,308 (27%) of the sockeye salmon taken in the region (Table 1). The largest catches were made in District 104 (Table 4). A total of 171,214 sockeye salmon were taken in this district, approximately 275,000 less than was harvested in 1986, but 55% of the total 1987 purse seine harvest. Peak catches in District 104 were highest during the week of 2 to 8 August, when 66,894 sockeye salmon were caught. This fishery harvests mixed stocks of sockeye salmon bound for Southeast Alaska and Canada. SPA results indicate that over 77% of the District 104 catch was bound for the Nass and Skeena Rivers (G. Oliver, ADF&G, Commercial Fisheries Division, Douglas, personal communication).

The District 112 purse seine fishery harvested 44,766 sockeye salmon incidental to the harvest of pink (*Oncorhynchus gorbuscha*) and chum salmon (*Oncorhynchus keta*). This represents an increase of 36,389 sockeye salmon from the 1986 harvest.

The District 101 purse seine harvest of sockeye salmon totaled 43,947 of which 618 were taken in the Annette Island Fishery Reserve. Catches were highest during the week 2 to 8 August. Catches were comprised primarily of Alaskan fish (69%) (G. Oliver, ADF&G, Commercial Fisheries Division, Douglas, personal communication).

A total of 17,476 sockeye salmon was taken in the District 102 purse seine fishery. Catches were comprised primarily of Alaskan fish (74%) (G. Oliver, ADF&G, Commercial Fisheries Division, Douglas, personal communication).

A total of 13,704 sockeye salmon were taken in District 113. This district is very large and contains a great diversity of fishing areas on the outer coast and several large straits leading inland. The catch was distributed widely among subdistricts, although 4,813 fish were taken in Subdistrict 34 (Necker Bay).

Less than 10,000 sockeye salmon each were incidentally harvested in purse seine fisheries targeting on pink and chum salmon in Districts 103, 105, 109, 110, 111, and 114.

Commercial Troll Catch. Sockeye salmon are taken incidentally by the troll fleet. A total of 9,726 fish were taken in 1987 (Table 1). Largest catches were recorded in District 114 where 3,553 (37%) of the troll harvest occurred (Table 5).

Commercial Trap Catch. Four floating fish traps were used to harvest sockeye salmon in the Annette Island Fishery Reserve in District 101. A total of 6,098 sockeye salmon were harvested in 1987. Catches were highest during 19 to 25 July when 1,564 fish were caught (Table 6). This is the only area in the Southeast Region where fish traps are legal gear for harvesting salmon.

Canadian Transboundary River Catch. A commercial gill net fishery in the Canadian portion of the Taku River harvested 13,554 sockeye salmon (Table 7), approximately the same number taken in 1985 and 1986. Catches were highest during the week 19 to 25 July when 4,621 fish were caught. Results of SPA indicate that the catch was comprised of 40% Little Trapper Lake, 35% Mainstem Taku, 14% Tatsamenie Lake, and 11% Kuthai Lake fish (A. McGregor, ADF&G, Commercial Fisheries Division, Douglas, personal communication).

Commercial gill net fisheries in the Canadian portion of the Stikine River exploit most of the Canadian Stikine sockeye stocks. In 1987, 6,138 sockeye salmon were harvested from the lower river commercial fishery (Table 7). Weekly catches in the lower river fishery exhibited two maxima, the first during the week 19 to 25 July and the second during 2 to 8 August. Tahltan Lake fish comprised 23% of the catch while other stocks comprised the remainder (Jensen and Frank *In press*). On the upper Stikine River a subsistence fishery harvested 2,979 sockeye salmon and a commercial fishery harvested 498 fish.

Sport Catch. The sport catch of sockeye salmon in Southeast Alaska was estimated to be 7,581 fish (G. Sanders, ADF&G, Sport Fish Division, Douglas, personal communication) (Table 8).

Subsistence Catch. The sum of reported subsistence harvest of sockeye salmon in Southeast Alaska was 25,273 from all areas (Table 9). The true subsistence harvest was certainly higher since many permits (approximately 15%) were not returned to ADF&G.

Age, Sex, and Size Data

Gill Net Catch. Detailed age and length compositions of sockeye salmon in the catches for each district sampled are presented in Appendices B.1 through B.15 in McPherson et al. (1988c). Five- and six-year-old sockeye salmon (1982 and 1981 brood years) were the dominant year classes taken in the gill net fisheries, comprising 71% and 20%, respectively, of the total catch (Table 10). Spacial trends in age composition of sockeye salmon in the catches over all districts were similar to those exhibited by catches in 1982 through 1986 (McGregor 1983; McGregor et al. 1984; McGregor and McPherson 1986; McPherson and McGregor 1986; McPherson et al. 1988). Age-1.3 sockeye salmon dominated in the catches from all districts and comprised from 52.7% of the catch in District 101 to a maximum of 76.5% in the U.S. District 111 fishery. Fish with no fresh water annuli (ages 0.2, 0.3, and 0.4) were common in the District 108 and 111 catches and were also found in appreciable numbers in Lynn Canal (District 115). Sockeye salmon that spent two winters in freshwater prior to migrating to sea (ages 2.1, 2.2, and 2.3) were more common in the District 101, 115, and 106 catches (36.9%, 31.8%, and 25.6%, respectively) than in other districts. Four-year-old fish (primarily ages 0.3 and 1.2) represented between 7% and 28% of the catches in all districts.

Distinct shifts in age composition during the season were apparent (NSC = nonstatistical comparisons) in all seven gill net areas for which data could be stratified by sample period. Age-1.3 fish generally represented smaller proportions of the catches as the season progressed. Age-2.2 fish

became more common later in the season in all districts where appreciable numbers of these fish were caught. Age-2.3 fish represented greater proportions of catches later in the season in each of the fisheries except District 101 and the lower Stikine and Taku inriver fisheries where no consistent trend was observed. Age-0. fish increased in numbers in the catches during the season in District 111 and both Canadian inriver fisheries, but decreased in abundance in the District 101 and 115 catches.

Differences in the average length of the sockeye salmon existed within age classes between districts (Table 11). These length calculations should be viewed with caution as they are not weighted by period catches and the proportion of the catch sampled each week was variable. The individual stratified periods listed in the appendix tables in McPherson et al. (1988c) are, however, correct for making comparisons between periods. Females exhibited less variance in size than males and were smaller. Fish with three marine annuli were larger than fish with two marine annuli. In general, the Canadian Taku River were the smallest and District 101 the largest fish within age classes.

No apparent trends in the temporal length distributions were apparent within the gill net fisheries in 1987.

The average weight per sockeye salmon increased (NSC) near the end of the season in most gill net fisheries (Table 12). Many fishermen employ a larger mess size at this time of the year to catch coho and chum salmon, thereby selecting for larger size sockeye salmon. The average weight for a fish over the entire season was smallest in District 106 (2.97 kg) and largest in District 115 (3.17 kg). From the southernmost to the northernmost districts, average weight increased (NSC).

Purse Seine Catch. Detailed age and length compositions of the purse seine catches for each district sampled are presented in Appendices C.1 through C.20 in McPherson et al. (1988c). Generally, younger aged sockeye salmon were taken in the purse seine catches than in gill net catches. The two most common ages in the purse seine catches were 1.2 and 1.3, comprising 18% and 55% of the season's catch, respectively (Table 13). In the gill net catches the most common ages were 1.3 and 2.3 or 62% and 20%, respectively, (Table 10). Four- and five-year-old sockeye salmon (1983 and 1982 brood years) were the dominant year classes caught in the purse seine fisheries, comprising 20% and 66%, respectively, of the total harvest. Age-1.3 fish predominated in catches from all districts except in Subdistrict 34 of District 113 (Necker Bay) where age-2.2 fish represented the dominant age class. Six-year-old fish (1981 brood year) were important contributors to catches in all districts. Age-0. fish were much less common in purse seine catches than in gill net fisheries except in Districts 109, 110, 112, and 114. Catches in these districts are comprised, in part, of fish bound for the Chilkat, Taku, and Stikine Rivers. Age-0. fish typically spawn and rear in side sloughs and small tributaries along the mainstems of these large rivers.

Distinct shifts (NSC) in age composition with time were apparent in seven of the eight purse seine districts stratified by sample period. Age-1.3 fish represented a smaller proportion of the catches later in the season in all districts except 109 where no change was evident. Age-2.2 fish became

more common later in the season in Districts 102, 112 and 114 and likewise, the proportion of age-2.3 fish became more prevalent in Districts 112, 113, and 114. The proportion of age-1.2 fish increased with time in Districts 102, 104, and 110 and decreased in District 113 (excluding 113-34). Age-0.3 fish exhibited shifts only in Districts 112 and 114 where slight decreases were evident.

Differences (NSC) in average lengths of sockeye salmon within specific age classes occurred between districts (Table 14). Fish in District 101 and 112 were among the largest within an age class and those in Subdistrict 113-34 were the smallest. The average length of males was generally greater than those of females within specific age classes. As was observed in the gill net fisheries, length increased with ocean age.

Few obvious temporal changes in average lengths of sockeye salmon within specific age classes were observed (NSC). Exceptions to this occurred in District 110 where the average length within an age class decreased from 15 to 41 mm and in District 112 where fish increased in average length by 17 to 85 mm.

The average weight of sockeye salmon exhibited no obvious trend throughout the season in the purse seine fisheries in 1987 (Table 15). With the exception of District 113 (including 113-34), fish in northern districts were larger than their southern counterparts, as was seen in the gill net fisheries. Fish in District 110 were largest (3.01 kg) and in District 113, the smallest (2.19 kg).

Test Fisheries Catches. Detailed age and length compositions of the gill net test fishery catches for each district sampled are presented in Appendices D.1 through D.11 in McPherson et al. (1988c). The purse seine test fishery in District 102 operated for 2 weeks early in the season. In Subdistrict 106-41 (Sumner Strait), a drift gill net test fishery was conducted for the first week of the season. The drift gill net test fisheries in Subdistricts 108-50 and 108-60 operated only during statistical weeks 29 through 31 and provided managers with an opportunity to evaluate stock composition and run strength at a time when District 108 was closed to fishing. The drift gill net and set gill net test fisheries in the Canadian portion of the Stikine River operated thoughout the season and were used to estimate stock contributions to the 1987 run (Jensen and Frank in press). SPA results indicate that 31% of the Stikine River test catch in 1987 was of Tahltan Lake origin and the remainder was comprised of other stocks in the system. The test fishery conducted in District 111 was designed to compare the efficiencies of different types of gill nets. Test fishery catches of sockeye salmon in the Canadian portion of the Taku River were incidental to evaluation of coho and chum salmon run strength.

Migratory Timing

Gill Net Fishery. Run timing analysis of the catches in the gill net fisheries provided mean dates (in statistical weeks, MSW) of migration which ranged between 29 and 31 (12 July to 1 August) for all districts (Table 16). The run in District 101 was the earliest (MSW = 29.4, July 18) and that in District 115 the latest (MSW = 31.3, July 31). The migration in District 101 was the most dispersed (SD = 2.5 weeks) while those in

Subdistrict 106-30 and the 2 Canadian fisheries the least dispersed (SD = 1.7 weeks). Run timing among individual age classes within districts indicates that, in Districts 101 and 115, the MSW increased with increasing freshwater age and, in the Canadian Stikine fishery, an opposite trend was evident. In Districts 101, 106 and 115, age-0.3 fish arrived earliest and in the U.S. District 111 and both Canadian fisheries, these fish arrived latest. No apparent differences in run timing across ocean ages were observed.

Purse Seine Fishery. Catches in the purse seine fisheries for which adequate sampling stratification existed show that overall run timing was earliest (NSC) in District 104 (MSW = 30.8, July 28) and latest in District 102 (MSW = 32.2, August 6) (Table 17). The fishery in District 102 was closed early in the season which contributed to the late MSW. The harvest in all districts was equally dispersed as measured by the SD ranging only from 1.3 to 1.4 weeks. Fish with no freshwater annulus tended to arrive prior to age-1. and -2. fish in Districts 101 and 104, while fish aged 1. arrived prior to fish aged 0. and 2. in District 112. Age-0. fish were early in District 104, as mentioned above. No temporal trends among ocean ages were observed.

Escapement Data

Detailed age compositions, length compositions, and daily weir counts are presented in Appendices E.1 through E.105 in McPherson et al. (1988c).

Abundance Estimates

The largest estimated escapement occurred at McDonald Lake where the estimate from stream life/foot survey data was 170,000 fish (Table 18). Large spawning escapements to Chilkoot Lake (95,185 fish) and the Taku River (73,246 fish) were observed. These estimates are comparable to those for the previous 3 years. Only 48,593 sockeye salmon were counted past the Chilkat Lake weir, which was approximately 24,000 below the average for 1976 to 1985. A total of 32,978 fish were counted past the Hugh Smith Lake weir which is approximately 25,000 more than were estimated in 1986. Two types of escapement estimates are presented in Table 18: total escapement estimates and relative or partial escapement estimates. Foot and aerial counts represent only the fish visible during one-day surveys and should not be construed to be accurate indicators of escapement magnitude.

Age, Sex, and Size Composition

Five-year-old fish (primarily age 1.3) dominated in most of the 45 escapement collections (Table 19). Five-year-old fish were the most abundant age class in 34 of the systems. In the remaining eleven systems, four-year- old fish (primarily ages 0.3 and 1.2) dominated in nine systems. Age-0.3 fish were the principal age class in 5 collections from along the Taku Mainstem and age-1.2 fish dominated escapements in four other systems. Three-year-old fish were most abundant in Luck Lake and six-year-old fish most abundant in the Auke Lake escapement.

Age-1. fish were the dominant freshwater age class in 78% of the escapement collections (Table 19). Age-0. and -2. fish each dominated in 11% of the escapement systems. Fish aged 0. were common in collections from along the mainstems of the three largest river systems in the region: the Chilkat, Taku, and Stikine. Age-2. fish dominated the escapement abundances in five lake systems: Sarkar, Thoms, Auke, Redoubt, and Chilkat.

Age-.3 fish were the most prevalent ocean age in 35 of the 45 escapement collections. Younger fish were more slightly more prevalent in southern Southeast (Districts 101 - 108) where age-.1 and -.2 fish dominated 17% of the 18 escapement collections from these districts. This contrasts to 1986 analyses where half of the southern escapements were age-.2 fish. In northern districts (109 - 115) age-.2 fish were most abundant in only 2 (7%) of the 27 escapement collections, compared to 24% in 1986.

Samples from 12 escapement systems were large enough to allow separation into time periods. Temporal trends in the age compositions were observed in all systems except Little Trapper and Crescent Lakes. Among the other ten systems no consistent patterns were observed, but within individual escapements the most common trends in relative abundance were: (1) a decrease in age-1.2 fish with time in three systems; (2) an increase in age-2.2 fish in three systems; (3) a decrease in age-1.3 fish in 7 systems; and (4) an increase in age-2.3 fish with time in six of the systems (NSC). Age-2. fish increased significantly in the latter portions of the returns to Hugh Smith, Chilkat, and Chilkoot Lakes. Holdover occurs in these systems for this age group of fish due to a late spawning segment and subsequent late emergence.

Differences (NSC) in average lengths were observed within major age classes among escapement systems (Table 20). No apparent trends were observed among fish aged 0.3. Fish aged 1.2 tended to be smaller in escapments to the Stikine and Taku Rivers and to Chilkoot and Chilkat Lakes compared to fish in escapements to island systems. This trend is most likely the result of selectivity by the gill net fleets in terminal areas. Age-1.3 fish exhibited no obvious trends; largest fish in this age class were observed in Naha, Karta, Tahltan, and Chilkat Lakes and the smallest were observed in Helm and Kutlaku Lakes. Fish aged 2.2 were slightly longer in northern escapements. The largest fish aged 2.2 were observed in Naha, Karta, and Chilkat Lakes and the smallest in Luck, Petersburg, Speel, and Crescent Lakes. No apparent trends were observed among fish aged 2.3.

Few trends were observed in the twelve escapement systems in which sample sizes were large enough to permit stratification by time. The exceptions were among fish in Salmon Bay Lake aged 2.2 and 2.3 in which average length increased over time, in Redoubt Lake where fish of all age classes decreased over time, and in Chilkat Lake where fish of most age classes increased over time.

Migratory Timing

Fifteen sockeye salmon weirs were operated in Southeast Alaska and in tributaries of the Taku and Stikine Rivers in western British Columbia. Dates of operation, final escapement counts, and run timing characteristics of these escapements are summarized in Table 21. The mean dates of return

to Karta River and Chilkoot Lake, 23 July and 27 July, respectively, were the earliest of all the systems, while the mean dates of the Hackett River and Klawock Lake returns, 6 September and 10 September, respectively, were the latest. The Little Trapper Lake return was the most concentrated (SD = 4 days), while the Chilkat Lake return was the most evenly distributed over the longest period of time (SD = 31 days).

Historical Age Compositions

Historical age compositions for gill net and purse seine fisheries and selected escapements are presented in Appendices B.1 through B.3. These data are presented principally for future use in construction of brood year tables, setting of escapement goals, and forecasting. General trends in age structure and year class strength can be seen in this data.

All gill net fisheries were dominated by five-year-old (mostly age 1.3) fish in all years where sufficient samples were taken to precisely describe age structure (Appendix B.1). Age compositions in District 101 consistently exhibit a high proportion of age-2.2 fish. The age compositions in Districts 106, 108, and 111 are dominated by age-1.3 fish. Fish in District 115 are older than fish in other gill net fisheries and age compositions consistently show a high proportion of age-2.3 fish.

All purse seine fisheries were dominated by five-year-old (mostly age 1.3) sockeye salmon in all years except in District 104 in 1984 where four-year-old (age-1.2) fish were the dominant age class. Age-1.2 fish are more prevalent in the purse seine fisheries than in gill net fisheries in all years, meaning that the average age of sockeye salmon harvested in the purse fisheries is younger. Age-2.2 fish were the dominant age class in all years in Subdistrict 113-34 and age 0.3 fish are consistently prevalent in District 112.

Historical age compositions from selected escapements in Southeast Alaska are shown in Appendix B.3. Age-1.3 fish dominated most escapements in most years. The most notable exceptions to this occurred in Hugh Smith Lake where age-1.2 fish dominated in two years, in Sarkar Lake where age-1.2 and 2.2 fish each dominated in two years, and in Chilkat Lake where age-2. fish were predominant in 6 of 7 years. Interannual shifts in age structure in many individual escapements can be attributed to year-class strengths in combination with environmental factors.

LITERATURE CITED

ADF&G (Alaska Department of Fish and Game) 1988. Report to the Board of Fisheries - 1987 Region I finfish fisheries. Division of Commercial Fisheries, Regional Information Report 1J88-5, Juneau.

Chapman, D.G. and C.O. Junge. 1956. The estimation of the size of a stratified animal population. Annals of Mathematical Statistics 27:375 - 389.

Clutter, R. and L. Whitesel. 1956. Collection and interpretation of sockeye salmon scales. Bulletin International Pacific Salmon Fisheries Commission 9. New Westminster, B.C.

Cochran, W. 1977. Sampling techniques, 3rd edition. John Wiley & Sons, Inc. New York.

Darroch, J.N. 1961. The two-sample capture-recapture census when tagging and sampling are stratified. Biometrika 48:241-260.

Eggers, D. and M.R. Dean. 1987. Alaska commercial salmon catches, 1978-1986. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J87-01, Juneau.

INPFC (International North Pacific Fisheries Commission). 1963. Annual Report - 1961. Vancouver, B.C.

Jensen, K.A., and I.S. Frank. *In press.* Stock compositions of sockeye catches in Southeast Alaska's Districts 106 and 108 and in the Stikine River, 1987, estimated with scale pattern analysis. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report, Juneau.

McGregor, A.J. 1983. Age, sex, and size of sockeye salmon (*Oncorhynchus nerka Walbaum*) catches and escapements in Southeastern Alaska in 1982. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 100, Juneau.

McGregor, A. J. and J. E. Clark. 1988. Migratory timing and escapement of Taku River salmon stocks in 1987. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J88-26, Juneau.

McGregor, A.J., S.A. McPherson, J.E.Clark. 1984. Abundance, age, sex, and size of sockeye salmon (*Oncorhynchus nerka Walbaum*) catches and escapements in Southeast Alaska in 1983. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 132, Juneau.

McGregor, A.J. and S.A. McPherson. 1986. Abundance, age, sex, and size of sockeye salmon (*Oncorhynchus nerka Walbaum*) catches and escapements in Southeastern Alaska in 1984. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 166, Juneau.

LITERATURE CITED (Continued)

McGregor, A.J. and B.W. Van Alen. 1988. Abundance, age, and sex compositions of chinook, sockeye, coho, and chum salmon catches and escapements in Southeast Alaska in 1981. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 200, Juneau.

McPherson, S.A. and A.J. McGregor. 1986. Abundance, age, sex, and size of sockeye salmon (*Oncorhynchus nerka Walbaum*) catches and escapements in Southeastern Alaska in 1985. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 166, Juneau.

McPherson, S.A., A.J. McGregor, and F.E. Bergander. 1988a. Data: Abundance, age, sex, and size of sockeye salmon catches and escapements in Southeast Alaska in 1986. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J88-2, Juneau.

McPherson, S.A., A.J. McGregor, and F.E. Bergander. 1988b. Abundance, age, sex, and size of sockeye salmon catches and escapements in Southeast Alaska in 1986. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 88-08, Juneau.

McPherson, S.A., A.J. McGregor, and M.A. Olsen. 1988c. Data: Abundance, age, sex, and size of sockeye salmon catches and escapements in Southeast Alaska in 1987. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J88-23, Juneau.

Mundy, P.R. 1979. A quantitative measure of migratory timing illustrated by application to the management of commercial salmon fisheries. Ph.D. dissertation, University of Washington, Seattle.

Mundy, P.R. 1982. Computation of migratory timing statistics for adult chinook salmon in the Yukon River, Alaska, and their relevance to fisheries management. North American Journal of Fisheries Management 2:359-370.

Pahlke K. 1988. Length conversion equations for sockeye, chinook, and coho salmon in Southeast Alaska. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J88-03, Juneau.

Robson, D.S. and H.A. Regier. 1964. Sample size in Petersen mark-recapture experiments. Transactions of the American Fisheries Society. 93(3): 215 - 226.

TABLES AND FIGURES

Table 1. Harvest of sockeye salmon in Southeast Alaska, 1987.

Fishery	Number Harvested	Percent
Alaskan Commercial		
Gillnet	783,899	66.7
Purse Seine	311,308	26.5
Trap	6,098	0.5
Troll	9,726	0.8
Miscellaneous[a]	6,349	0.5
Subtotal	1,117,380	95.0
Canadian Transboundary		
Taku Commercial	13,554	1.1
Stikine Commercial	6,138	0.5
Stikine Subsistence	2,979	0.3
Subtotal	22,671	1.9
Canadian Tranboundary		
Taku Test Fish[b]	1,430	0.1
Stikine Test Fish[b]	1,667	0.1
Subtotal	3,097	0.3
Sport	7,581	0.6
Alaskan Subsistence	25,273	2.2
Total	1,176,002	100.0

[a] Includes test fish catches, confiscated fish, hatchery harvests, etc.

[b] Does not apply to U.S./Canada treaty allocation.

Table 2. Total commercial harvest of sockeye salmon in Southeast Alaska by district and statistical week, 1987.[a]

Inclusive Dates	Stat. Week	Districts								Southern Southeast Total
		101[b]	102	103	104	105	106	107	108	
May 31-June 6	23								8	8
June 7-June 13	24									0
June 14-June 20	25				12	1	110		8	131
June 21-June 27	26	16,996	2	4	66	5	5,284	1	208	22,566
June 28-July 4	27	20,296	7	3	59	19	10,861	1	275	31,521
July 5-July 11	28	18,285	8	12	4,375	4	21,251	6	838	44,779
July 12-July 18	29	20,401	17	18	38,324	93	22,776	3	498	82,130
July 19-July 25	30	38,639	38	9	30,103	20	25,172	6	31	94,018
July 26-Aug. 1	31	24,184	4,926	48	23,581	24	23,487	15	36	76,301
Aug. 2-Aug. 8	32	39,631	8,162	19	67,043	13	23,032	4		137,904
Aug. 9-Aug. 15	33	23,124	3,274	3	7,139	1	6,762	2		40,305
Aug. 16-Aug. 22	34	413	37	1,214	2,065	4	66	7		3,806
Aug. 23-Aug. 29	35	2,288	50	1	23	3	354	2	2	2,723
Aug. 30-Sept. 5	36	1,023	632	169	6	1	85	1	1	1,918
Sept. 6-Sept. 12	37	820	627	230	1		6	1	1	1,686
Sept. 13-Sept. 19	38	159	4	2			9			174
Sept. 20-Sept. 26	39	64	10							74
Sept. 27-Oct. 3	40									0
Oct. 4-Oct. 10	41		1							1
Oct. 11-Oct.17	42									0
Total		206,323	17,795	1,732	172,797	188	139,255	49	1,906	540,045

-Continued-

Table 2. (page 2 of 2)

Inclusive Dates	Stat. Week	Districts 109	110	111	112	113	114	115	Outside Troll[c]	Northern Southeast Total	Southeast Total
May 31-June 6	23									0	8
June 7-June 13	24									0	0
June 14-June 20	25		2			20	2		13	37	168
June 21-June 27	26	23	2	2,611	1	205	272	7,455	37	10,606	33,172
June 28-July 4	27	10	5	6,209	380	234	909	26,820	105	34,672	66,193
July 5-July 11	28	51	36	5,646	812	299	2,789	7,159	55	16,847	61,626
July 12-July 18	29	75	3,871	14,722	10,214	1,581	447	52,010	157	83,077	165,207
July 19-July 25	30	56	1	16,105	14,261	6,709	1,372	51,357	205	90,066	184,084
July 26-Aug. 1	31	1,672	3,866	14,392	10,867	4,621	670	48,444	277	84,809	161,110
Aug. 2-Aug. 8	32	1,535	1,931	9,521	3,529	277	158	101,627	297	118,875	256,779
Aug. 9-Aug. 15	33	1,361	117	4,152	4,618	1,862	18	51,004	3	63,135	103,440
Aug. 16-Aug. 22	34	239		1,990	165	118	512	40,670	120	43,814	47,620
Aug. 23-Aug. 29	35	10		1,418	7	39	56	19,988	81	21,599	24,322
Aug. 30-Sept. 5	36	4		215		59	34	5,031	29	5,372	7,290
Sept. 6-Sept. 12	37	1		36		3	26	2,560	8	2,634	4,320
Sept. 13-Sept. 19	38			3		2	73	1,089		1,167	1,341
Sept. 20-Sept. 26	39			3		3	8	521		535	609
Sept. 27-Oct. 3	40							48		48	48
Oct. 4-Oct. 10	41							18		18	19
Oct. 11-Oct.17	42							24		24	24
Total		5,037	9,831	77,023	44,854	16,032	7,346	415,825	1,387	577,335	1,117,380

[a] Includes catches by miscellaneous gear types in addition to trap, gillnet, purse seine, and troll.

[b] Includes catches made on the Annette Island Fishery Reserve in District 101.

[c] Includes catches made in Districts 116, 150, 152, 154, 156, 157, 181, 183, 186, 189, 191.

Table 3. Total gill net harvest of sockeye salmon in Southeast Alaska by district and statistical week, 1987.

Inclusive Dates	Stat. Week	Districts[a] 101[b]	101[c]	106[d]	108	111	115	Total
June 21-June 27	26	15,663	1,327	5,149	189	2,611	7,452	32,391
June 28-July 4	27	17,562	2,727	10,432	245	6,209	26,820	63,995
July 5-July 11	28	10,136	7,662	20,745	759	5,437	7,159	51,898
July 12-July 18	29	9,555	5,564	22,286	423	13,968	52,010	103,806
July 19-July 25	30	17,217	8,813	24,671	-	15,457	51,357	117,515
July 26-Aug. 1	31	7,071	10,161	22,998	-	14,035	48,444	102,709
Aug. 2-Aug. 8	32	17,219	7,587	23,028	-	9,521	101,627	158,982
Aug. 9-Aug. 15	33	11,309	2,202	6,760	-	4,142	51,004	75,417
Aug. 16-Aug. 22	34	-	-	-	-	1,990	40,670	42,660
Aug. 23-Aug. 29	35	983	915	269	2	1,414	19,981	23,564
Aug. 30-Sept. 5	36	675	219	84	1	211	5,031	6,221
Sept. 6-Sept. 12	37	127	78	6	1	34	2,560	2,806
Sept. 13-Sept. 19	38	57	100	9	-	3	1,089	1,258
Sept. 20-Sept. 26	39	6	57	-	-	3	521	587
Sept. 27-Oct. 3	40	-	-	-	-	-	48	48
Oct. 4-Oct. 10	41	-	-	-	-	-	18	18
Oct. 11-Oct.17	42	-	-	-	-	-	24	24
Total		107,580	47,412	136,437	1,620	75,035	415,815	783,899

[a] Dash (-) indicates fishery not open for that particular strata.

[b] Totals include 92 fish from Neets Bay Hatchery area (101-95) statistical week 27.

[c] Gill net catch on the Annette Island Fishery Reserve in District 101, Subdistricts 24, 26, 28, and 42. Catch figures are in addition to other 101 gill net totals in first column.

[d] Totals include 10 fish from Crystal Lake Hatchery area (106-44) statistical weeks 35 and 36.

Table 4. Total purse seine harvest of sockeye salmon in Southeast Alaska by district and statistical week, 1987.

Inclusive Dates	Stat. Week	Districts[a] 101[b]	101[c]	102	103[d]	104	105	109	110	111	112[e]	113	114	Total
June 28-July 4	27	-	-	-	-	-	-	-	-	-	345	-	713	1,058
July 5-July 11	28	24	-	-	-	4,258	-	-	-	46	811	16	2,522	7,677
July 12-July 18	29	3,964	3	-	-	38,214	-	-	3,870	141	10,199	1,030	-	57,421
July 19-July 25	30	11,019	-	-	-	29,913	-	-	-	255	14,252	6,432	83	61,954
July 26-Aug. 1	31	5,785	-	4,882	-	23,072	-	1,603	3,866	-	10,855	4,323	79	54,465
Aug. 2-Aug. 8	32	13,319	350	8,146	-	66,894	-	1,465	1,931	-	3,528	-	-	95,633
Aug. 9-Aug. 15	33	9,218	120	3,174	-	7,050	-	1,337	117	-	4,617	1,851	-	27,484
Aug. 16-Aug. 22	34	-	-	-	1,182	1,813	-	191	-	-	159	8	367	3,720
Aug. 23-Aug. 29	35	-	-	-	-	-	-	-	-	-	-	-	-	0
Aug. 30-Sept. 5	36	-	88	632	167	-	1	4	-	-	-	42	-	934
Sept. 6-Sept. 12	37	-	57	627	230	-	-	-	-	-	-	1	12	927
Sept. 13-Sept. 19	38	-	-	4	2	-	-	-	-	-	-	-	11	17
Sept. 20-Sept. 26	39	-	-	10	-	-	-	-	-	-	-	1	6	17
Sept. 27-Oct. 3	40	-	-	-	-	-	-	-	-	-	-	-	-	0
Oct. 4-Oct. 10	41	-	-	1	-	-	-	-	-	-	-	-	-	1
Total		43,329	618	17,476	1,581	171,214	1	4,600	9,784	442	44,766	13,704	3,793	311,308

[a] Dash (-) indicates fishery not open for that particular strata.

[b] Totals include 24 fish from Neets Bay Hatchery area (101-95) statistical week 28.

[c] Purse seine catch on the Annette Island Fishery Reserve in District 101, Subdistricts 24, 26, 28, and 42. Catch figures are in addition to other 101 purse seine totals in first column.

[d] Totals include 152 fish from Klawock Hatchery area (103-60) statistical weeks 36, 37, and 38.

[e] Totals include 3,276 fish from Hidden Falls Hatchery (112-22) statistical weeks 27, 28, 29, 30, 32, 33, and 34.

Table 5. Total troll harvest of sockeye salmon in Southeast Alaska, by district and statistical week, 1987.

Inclusive Dates	Stat. Week	Districts																
		101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	Outside Troll[a]	Total
May 31-June 6	23	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	8
June 7-June 13	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
June 14-June 20	25	0	0	0	12	1	8	0	0	0	2	0	0	20	2	0	13	58
June 21-June 27	26	6	2	4	66	5	0	1	0	23	2	0	1	205	272	3	37	627
June 28-July 4	27	6	7	3	59	19	5	1	0	10	5	0	0	234	196	0	105	650
July 5-July 11	28	23	8	12	117	4	3	6	7	41	6	0	1	283	267	0	55	833
July 12-July 18	29	22	17	18	110	13	5	3	0	75	1	1	4	551	447	0	157	1,424
July 19-July 25	30	26	38	9	190	20	3	6	0	55	1	1	9	277	1,289	0	205	2,129
July 26-Aug. 1	31	29	44	48	509	24	23	15	0	67	0	0	12	298	591	0	277	1,937
Aug. 2-Aug. 8	32	36	16	19	149	13	4	4	0	61	0	0	1	275	158	0	297	1,033
Aug. 9-Aug. 15	33	0	1	3	13	1	2	2	0	8	0	0	1	10	18	0	3	62
Aug. 16-Aug. 22	34	8	1	14	41	4	9	7	0	29	0	0	6	110	145	0	120	494
Aug. 23-Aug. 29	35	5	50	1	23	3	3	2	0	4	0	0	7	39	56	7	81	281
Aug. 30-Sept. 5	36	3	0	2	6	0	1	0	0	0	0	0	0	17	34	0	29	92
Sept. 6-Sept. 12	37	6	0	0	1	0	0	0	0	1	0	0	0	2	14	0	8	32
Sept. 13-Sept. 19	38	0	0	0	0	0	0	0	0	0	0	0	0	1	62	0	0	63
Sept. 20-Sept. 26	39	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3
Total		171	184	133	1,296	107	66	47	15	374	17	2	42	2,322	3,553	10	1,387	9,726

[a] Includes catches made in Districts 116, 150, 152, 154, 156, 157, 181, 183, 186, 189, 191.

Table 6. Total trap harvest of sockeye salmon in Southeast Alaska by statistical week, 1987.

Inclusive Dates	Statistical Week	Subdistrict 101-28
July 5 - July 11	28	440
July 12 - July 18	29	1,293
July 19 - July 25	30	1,564
July 26 - August 1	31	1,138
August 2 - August 8	32	1,120
August 9 - August 15	33	275
August 16 - August 22	34	199
August 23 - August 29	35	38
August 30 - September 5	36	31
Total		6,098

Table 7. Canadian harvest of sockeye salmon from transboundary rivers by statistical week and location, 1987.

		Taku River			Stikine River				
Inclusive Dates	Statistical Week	Commercial Catch	Days	Boats	Upper River Commercial Catch	Days	Lower River Commercial Catch	Days	Subsistence Catch
June 14 - 20	25								3
June 21 - 27	26								2
June 28 - July 4	27	178	1	11	1	1	179	1	0
July 5 - 11	28	508	1	13	0	1	169	1	56
July 12 - 18	29	782	2	13	31	1	926	1	638
July 19 - 25	30	4,621	3	12	209	1	1,084	1	969
July 26 - Aug. 1	31	751	2	12	99	1	441	1	586
August 2 - 8	32	4,118	4	12	137	1	2,452	2	636
August 9 - 15	33	1,577	2	13	21	1	549	1	89
August 16 - 22	34	624	1	13			248	1	
August 23 - 29	35	195	1	12			76	1	
August 30 - Sept. 5	36	148	2	12			0	2	
Sept. 6 - 12	37	30	2	11			8	3	
Sept. 13 - 19	38	16	2.2	5			6	2	
Sept. 20 - 26	39	6	3	5			0	3	
Total		13,554	26.2	144	498	7	6,138	20	2,979

Table 8. Total estimated sport fish harvest of sockeye salmon in Southeast Alaska by area, 1987.

Area	Catch
Ketchikan	1,135
Prince of Wales Island	2,333
Kake-Petersburg-Wrangell	111
Sitka	447
Juneau	321
Haines-Skagway	2,970
Glacier Bay	264
Total	7,581

Table 9. Total reported subsistence harvest of sockeye salmon in Southeast Alaska, 1987.

Location Code	System	Numbers Reported[a]
101-30-075	Hugh Smith Lake	233
101-45-032	Leask Cove	69
101-80-063	McDonald River	3,989
District 101 Total		4,291
102-20-040	Dolomi	100
102-30-067	Kegan Lake	152
102-50-038	Dog Salmon	91
102-60-039	Polk Inlet	10
102-60-087	Karta River	2,346
102-70-058	Thorne River	40
District 102 Total		2,739
103-15-027	Klakas	30
103-25-020	Hetta Inlet	1,099
103-60-047	Klawock River	2,128
103-90-014	Deweyville	1,004
District 103 Total		4,261
105-43-002	Shipley Bay	510
District 105 Total		510
106-30-051	Hatchery Creek (Sweetwater)	321
106-41-010	Salmon Bay	136
106-41-030	Red Creek	32
District 106 Total		489
107-30-030	Thoms Creek	426
107-40-007	Mill Creek	49
District 107 Total		475
109-20-007	Gut Bay	221
109-20-013	Falls Lake	20
109-45-013	Security Bay	22
109-52-035	Pillar Bay	1,312
District 109 Total		1,575
112-12-025	Basket Bay	1,269
112-67-058	Kanalku	595
District 112 Total		1,864
113-13-001	Redfish Bay	175
113-22-008	Poltofski Lake	34
113-34-005	Necker Bay	2,579
113-41-032	Salmon Lake	17
113-41-043	Redoubt Bay	199
113-59-004	Sitkoh Bay	639
113-61-003	Leo's Anchorage	20
113-72-002	Klag Bay	791
113-72-003	Lake Anna	76
113-73-003	Ford Arm	26
District 113 Total		4,556
115-32-000	Chilkat Saltwater	875
115-32-025	Chilkat River	1,297
115-32-031	Chilkat River (Klukwan)	1,120
115-33-000	Chilkoot Saltwater	1,221
District 115 Total		4,513
Total Southeast		25,273

[a] The number of sockeye salmon taken as reported on subsistence permits returned to ADF&G. Actual harvests are higher.

Table 10. Age composition of sockeye salmon in the commercial gill net harvest in Southeast Alaska and transboundary rivers, by district, 1987.

District	Sample Size		Brood Year and Age Class																Total
			1985	1984			1983			1982			1981			1980			
			0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	3.2	1.5	2.4	3.3	4.2	
101	6,001	Percent	<0.1	0.1	0.2	1.5	8.4	0.1		52.7	27.5		9.3	0.1		<0.1	0.2	<0.1	
		Catch	28	97	188	1,572	9,029	82		56,663	29,622		9,967	116		21	191	4	107,580
106-30	4,372	Percent				0.2	8.7	0.1		63.2	8.0	0.1	19.4	0.1		0.1	0.1		
		Catch				131	4,956	81		36,165	4,585	82	11,102	68		46	46		57,262
106-41	5,097	Percent		0.1	<0.1	0.8	8.6	<0.1		65.8	7.9	0.2	16.2	0.3	<0.1	<0.1	0.1		
		Catch		85	11	641	6,789	27		52,108	6,270	130	12,842	206	5	5	46		79,165
108	92	Percent				10.9	6.5			68.5	2.2		12.0						
		Catch				176	106			1,109	35		194						1,620
108 (Stikine)	2,206	Percent		1.5	0.2	8.6	17.4	<0.1		61.9	2.6	0.4	7.1	<0.1		<0.1	0.1		
		Catch		95	13	528	1,071	2		3,802	157	25	435	3		2	5		6,138
111	5,635	Percent		0.1		10.2	4.7	<0.1	<0.1	76.5	1.2	0.2	7.1	<0.1		<0.1	<0.1		
		Catch		83		7,658	3,495	7	28	57,402	868	141	5,319	11		14	9		75,035
111 (Taku)	1,053	Percent		0.6	0.1	20.1	7.3	0.2	0.2	66.1	1.0	0.1	4.3	0.1					
		Catch		78	14	2,721	992	27	22	8,961	130	9	590	10					13,554
115	11,426	Percent		<0.1	<0.1	1.5	5.0		<0.1	61.4	5.1	0.1	26.6	0.1		0.1	0.1		
		Catch		56	27	6,039	20,600		54	255,518	21,369	440	110,710	288		253	461		415,815
Total	35,882	Percent	<0.1	0.1	<0.1	2.6	6.2	<0.1	<0.1	62.4	8.3	0.1	20.0	0.1	<0.1	<0.1	0.1	<0.1	
		Catch	28	494	253	19,466	47,038	226	104	471,728	63,036	827	151,159	702	5	341	758	4	756,169

Table 11. Average length of sockeye salmon in the commercial gill net catch in Southeast Alaska by sex, major age class, and district, 1987.[a]

Sex/ Age	Average Lengths (mm) by District						
	101	106-30	106-41	108	111	Taku 111[b]	115
Male							
0.3	582	515	618	580	603	594	601
1.2	534	541	528	510	489	474	507
1.3	597	598	602	604	606	602	597
2.2	577	547	553		527	480	561
2.3	609	596	603	598	594	598	604
Female							
0.3	591	590	587	588	581	575	588
1.2	537	531	532		491	515	513
1.3	588	584	588	596	587	585	587
2.2	565	548	551		545	524	552
2.3	591	586	586	600	589	576	589
Sexes Combined							
0.3	586	571	595	587	591	583	595
1.2	536	538	529	510	489	482	509
1.3	592	591	594	600	595	593	591
2.2	570	547	552		536	495	557
2.3	601	591	594	599	591	583	596

[a] Sample sizes and standard errors are presented in Appendix Tables B.1 through B.15 (McPherson, McGregor, Olsen 1988).

[b] Canadian Taku inriver commercial gill net fishery.

Table 12. Average weight of sockeye salmon harvested in the Southeast Alaska gill net fisheries by statistical week, 1987.

Stat. Week	Average Weights (kg) by District						
	101	101[a]	106-30	106-41	108	111	115
26	2.80	2.68	2.94	3.07	3.08	2.89	3.22
27	3.01	2.71	2.91	3.08	3.14	3.08	3.22
28	2.90	3.06	2.88	3.04	3.10	3.13	3.14
29	3.03	3.07	2.99	3.08	3.15	3.04	3.13
30	3.07	3.10	2.98	3.14		3.16	3.10
31	3.01	3.06	2.98	3.06		3.13	3.19
32	3.10	3.11	2.97	3.12		3.32	3.17
33	3.01	3.06	3.05	3.10		3.27	3.18
34						3.19	3.18
35	2.85	2.92	3.16	3.26	3.40	3.63	3.18
36	2.93	3.00	3.16	3.46	4.08	3.33	3.21
37	3.05	3.28	3.06	2.27	3.63	3.46	3.34
38	3.06	4.53	3.35	3.18		3.93	3.35
39	3.02	4.19				3.93	3.29
40							3.48
41							3.25
42							2.85
Average	2.99	3.05	2.97	3.08	3.12	3.15	3.17
Total Kg Caught	321,715	144,515	170,073	244,317	5,054	236,500	1,316,681

[a] Gill net catch on the Annette Island Fishery Reserve in District 101, Subdistricts 24, 26, 28, and 42.

Table 13. Age composition of sockeye salmon in the commercial purse seine harvest in Southeast Alaska by district, 1987.

			Brood Year and Age Class															
			1985	1984		1983			1982				1981			1980		
District	Sample Size		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	Total
101	2,620	Percent		<0.1	0.9	0.5	9.9	0.3		66.4	11.8		0.3	9.7	0.1	<0.1		
		Catch		9	392	212	4,285	152		28,784	5,103		133	4,211	33	15		43,329
102	1,335	Percent		0.1	0.5	0.5	16.8	0.5		53.2	8.7		0.2	19.0			0.5	
		Catch		11	80	93	2,934	80		9,306	1,514		40	3,330			88	17,476
103	284	Percent			2.1		9.2	2.8		48.2	9.9	1.1		26.1	0.4		0.4	
		Catch			33		145	45		761	156	17		412	6		6	1,581
104	3,878	Percent		0.2	4.3	0.3	23.3	1.1		53.3	9.8		0.1	7.7	<0.1		0.1	
		Catch		272	7,364	461	39,904	1,832		91,248	16,718		110	13,131	39		135	171,214
109	686	Percent		0.3	0.6	5.7	15.4	0.1	0.2	53.5	9.1			14.9			0.3	
		Catch		12	26	260	707	6	7	2,467	417			685			13	4,600
110	711	Percent	0.1	0.2	1.2	5.6	12.9	1.4		59.8	6.6		0.2	11.7	0.1		0.1	
		Catch	11	21	118	549	1,263	139		5,851	643		22	1,145	11		11	9,784
112	2,853	Percent	<0.1	0.3	0.6	8.3	8.2	0.5	0.1	61.6	6.6		0.3	13.1	<0.1	<0.1	0.2	
		Catch	21	128	278	3,700	3,689	240	57	27,588	2,977		112	5,860	8	8	100	44,766
113	495	Percent		0.5	0.5	0.8	11.0	3.8		36.4	17.1			26.1	1.3		2.4	
		Catch		48	48	72	976	337		3,234	1,523			2,325	116		212	8,891
113-34	411	Percent					3.9	1.9			92.7	1.0		0.2	0.2			
		Catch					187	94			4,461	47		12	12			4,813
114	535	Percent		0.4		4.7	5.2	1.3		64.8	6.6		0.2	15.1			1.7	
		Catch		16		179	197	48		2,457	252		6	574			64	3,793
Total	13,808	Percent	<0.1	0.2	2.7	1.8	17.5	1.0	<0.1	55.3	10.9	<0.1	0.1	10.2	0.1	<0.1	0.2	100.0
		Catch	32	517	8,339	5,526	54,287	2,973	64	171,696	33,764	64	423	31,685	225	23	629	310,247

Table 14. Average length of sockeye salmon in the commercial purse seine catch in Southeast Alaska by sex, major age class, and district, 1987.[a]

Sex/ Age	Average Lengths (mm) by District									
	101	102	103	104	109	110	112	113	113-34	114
Male										
0.3		590			565	591	597			603
1.2	513	533	494	513	505	483	467	483	406	445
1.3	599	585	588	598	594	601	604	583		587
2.2	568	538	531	558	518	512	541	499	416	452
2.3	601	584	590	598	584	607	600	587		586
Female										
0.3	580	595		565	566	564	571	590		574
1.2	503	519	523	508	485	468	503	484		504
1.3	585	570	573	580	580	572	582	583		572
2.2	553	507	514	529	513	513	532	483	420	
2.3	582	561	576	574	578	574	586	580	530	589
Sexes Combined										
0.3	580	593		565	566	578	584	590		590
1.2	508	525	510	510	493	478	484	483	406	484
1.3	591	578	579	588	587	586	592	583		579
2.2	559	521	523	542	515	512	537	491	416	452
2.3	590	573	583	589	581	590	592	582	530	587

[a] Sample sizes and standard errors are presented in Appendix Tables C.1 through C.20 (McPherson, McGregor, Olsen 1988).

Table 15. Average weight of sockeye salmon harvested in the Southeast Alaska purse seine fisheries by statistical week, 1987.

Stat. Week	Average Weights (kg) by District											
	101	101[a]	102	103	104	105	109	110	111	112	113	114
27										2.89		3.04
28	2.29		2.51		2.63				2.71	2.86	2.30	2.77
29	2.79	4.38	2.48		2.70			2.98	3.39	3.00	2.78	
30	2.68				2.73				2.89	2.91	1.51	3.01
31	2.69		2.88		2.68		3.02	3.00		2.87	2.82	2.94
32	2.79	2.39	2.81		2.78		2.93	3.05		2.94		
33	2.75	2.84	2.74		2.69		2.80	3.21		3.12	2.71	
34				2.71	2.70		2.74			3.00	2.33	3.01
35												
36		2.62	2.74	2.79		2.72	2.15				2.43	
37		2.91	2.40	2.98							0.91	3.25
38			1.81	2.04								2.23
39			2.36								2.27	2.72
40												
41			3.18									
Average	2.74	2.57	2.80	2.75	2.73	2.72	2.91	3.01	3.03	2.94	2.19	2.85
Total Kg Caught	118,668	1,587	48,903	4,352	467,487	3	13,398	29,422	1,342	131,801	29,953	10,828

[a] Purse seine catch on the Annette Island Fishery Reserve in District 101, Subdistricts 24, 26, 28, and 42.

Table 16. Mean statistical week (MSW) and standard deviation (SD) of sockeye salmon migration through the gill net fisheries in Southeast Alaska by age, 1987.

		Brood year and age class					
		1983		1982		1981	
Fishery		0.3	1.2	1.3	2.2	2.3	Total
101	MSW	26.8	30.2	29.1	29.9	29.5	29.4
	SD	1.6	2.6	2.2	2.7	2.7	2.5
106-30	MSW	30.0	30.3	30.1	30.4	30.7	30.3
	SD	2.1	1.8	1.7	1.9	1.6	1.7
106-41	MSW	29.3	29.5	29.4	29.8	30.0	29.5
	SD	1.9	1.9	1.8	2.1	1.8	1.9
108Can	MSW	31.6	31.5	31.0	30.6	30.5	31.1
	SD	1.4	1.5	1.8	1.7	1.6	1.7
111	MSW	30.9	29.5	30.0	30.9	30.4	30.1
	SD	1.9	2.0	1.9	2.7	2.2	2.0
111Can	MSW	32.0	30.7	31.1	30.5	30.6	31.2
	SD	1.5	1.8	1.7	1.8	1.6	1.7
115	MSW	28.0	30.7	30.6	33.1	32.9	31.3
	SD	1.7	1.8	2.1	2.0	2.2	2.3

Inclusive dates for mean statistical weeks are:

Statistical week 26 (June 21 - 27)
Statistical week 27 (June 28 - July 4)
Statistical week 28 (July 5 - 11)
Statistical week 29 (July 12 - 18)
Statistical week 30 (July 19 - 25)
Statistical week 31 (July 26 - August 1)
Statistical week 32 (August 2 - 8)
Statistical week 33 (August 9 - 15)
Statistical week 34 (August 16 - 22)

Table 17. Mean statistical week (MSW) and standard deviation (SD) of sockeye salmon migration through the purse seine fisheries in Southeast Alaska by age, 1987.

		Brood year and age class						
		1984	1983		1982		1981	
Fishery		1.1	0.3	1.2	1.3	2.2	2.3	Total
101	MSW	32.1	31.2	31.2	31.2	31.5	31.8	31.3
	SD	1.1	1.3	1.3	1.3	1.3	1.1	1.3
102	MSW	32.1	31.5	32.4	32.1	32.8	32.2	32.2
	SD	0.9	1.0	1.5	1.3	1.6	1.3	1.4
104	MSW	31.9	30.1	30.7	30.7	31.1	31.0	30.8
	SD	0.6	1.3	1.4	1.4	1.3	1.4	1.4
112	MSW	30.7	30.3	30.4	30.2	31.5	31.1	30.4
	SD	1.2	1.0	1.3	1.2	1.5	1.5	1.3

Inclusive dates for mean statistical weeks are:

Statistical week 30 (July 19 - 25)
Statistical week 31 (July 26 - August 1)
Statistical week 32 (August 2 - 8)
Statistical week 33 (August 9 - 15)

Table 18. Weir counts or estimated escapement counts for Southeast Alaska and transboundary river sockeye salmon systems, 1987. Abbreviations for types of surveys and escapement counts are as follows: (F) foot, (T) tagging estimate, (W) weir, (A) aerial.

Stream Number	Stream Name	Count	Method	Dates
101-30-075	Hugh Smith-Sockeye Creek	32,978	W	6/8-10/4
101-45-032	Leask Lake	2,002	A	8/20
101-80-068	McDonald Lake-Wolverine Creek	170,000	T[a]	8/21-10/1
101-90-050	Naha River	19,849	W	6/23-9/15
102-30-067	Kegan Lake Creek	175	F	9/10-9/11
102-60-087	Karta River	5,888	W	6/23-9/16
103-15-027	Klakas Lake Creek	200	F	9/7
103-25-047	Hetta Lake Creek	4,000	F	9/4-9/5
103-60-047	Klawock Lake	7,763	W	6/27-11/13
103-90-010	Sarkar Lake	120	F	9/16
105-31-003	Kushneahin Lake Creek	1,000	A	8/5
105-42-014	Sutter Creek	300	A	7/27
106-10-034	Luck Creek-Luck Lake	2,600	A	9/2
106-41-010	Salmon Bay Lake Creek	12,666	W	6/25-9/16
106-41-012	Salmon Bay Lake South Head	2,330	F	9/8
106-41-015	Salmon Bay Lake West Head	3,215	F	9/8
106-44-060	Petersburg Lake Creek	1,530	F	8/18
107-30-030	Thoms Lake Creek	1,750	F	9/10
108-40-020	Andrews Creek	309	F[b]	8/25
108-70-020	Stikine River	24,013		
108-80-110	Tahltan Lake	6,958	W	7/15-8/27
109-20-013	Falls Creek-Baranof Island	6,081	W	8/19
109-52-035	Kutlaku Lake Creek	1,575	F	9/1
109-62-013	Alecks Creek	7,600	A	9/8
111-32-032	Taku River-total Canadian Drainage	73,246	T[c]	6/15-9/20
111-32-066	Yehring Creek	392	W[d]	8/23-9/29
111-32-245	Little Trapper Lake	12,007	W	7/15-9/8
111-32-254	Little Tatsamenie Lake	2,794	W	8/3-9/26
111-32-260	Hackett River	910	W	8/15-10/12
111-32-270	Nahlin River	689	A	8/04
111-33-034	Speel Lake	9,353	W	7/19-8/29
111-35-006	Crescent Lake	7,839	W	7/12-8/28
111-50-006	Windfall Lake	1,724	F	8/10
111-50-042	Auke Creek	2,829	W	6/1-9/9
111-50-056	Steep Creek	1,720	F	7/31
112-12-027	Kook Creek Inlet	1,909	F	8/08
112-67-060	Kanalku Creek	300	A	9/08
113-13-001	Redfish Bay Head	2,000	A	8/24
113-34-005	Necker Bay Lake	13,000	A	8/03
113-41-043	Redoubt Lake Outlet	13,502	W	6/27-8/20
113-59-004	Sitkoh Lake Creek	2,000	F	9/25-9/27
113-72-002	Fish Camp-Klag Bay	2,000	A[e]	7/30
113-73-003	Ford Arm Lake	1,607		9/13
115-20-010	Berners River	250	F	8/16
115-20-020	Lace River	1,805	F	8/14-8/16
115-32-032	Chilkat Lake Outlet	48,593	W	6/18-11/20
115-33-020	Chilkoot River	95,185	W	6/4-10/18

[a] Mike Haddix, 1987, ADF&G, F.R.E.D. Div., Ketchikan, Ak.; personal communiction. Estimate based on stream life - foot survey.

[b] Final Report, Report of the Canada/United States Transboundary Technical Committee. Estimate based on a combination of commercial and test catches, and scale pattern analyses.

[c] Estimate based on Chapman - Junge and Darroch mark - recapture method.

[d] Incomplete count.

[e] Leon Shaul, ADF&G, Juneau; personal communication. Petersen mark - recapture estimate,

Table 19. Sample size and percentage age composition of sockeye salmon in escapements to Southeast Alaska and transboundary rivers in 1987.

Stream Number	System Name	Sample Size	Brood Year and Age Class																
			1985	1984		1983			1982				1981				1980		
			0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	4.1	1.5	2.4	3.3
101-30-075	Hugh Smith	3,888			0.5		1.9	0.4		88.7	3.1		0.1	5.2	0.1				0.2
101-80-068	McDonald	835			0.4		7.7	0.8		59.6	2.2			29.2	0.1				
101-90-050	Naha	4,703			<0.1	0.1	7.3			81.4	4.6	0.1	0.3	6.1					0.1
101-90-084	Helm	259			1.2		56.8	1.2		32.0	0.4			8.5					
102-30-067	Kegan	95			7.4		36.8	3.2		44.2	5.3			3.2					
102-60-087	Karta	3,534				0.2	5.1			85.7	1.4		0.2	7.4	<0.1			<0.1	0.1
103-25-047	Hetta	362			0.8		1.9			95.6				1.7					
103-15-027	Klakas	56					8.9			62.5	5.4			23.2					
103-60-047	Klawock (wier)	420			16.0		16.2	4.3		33.6	21.0			8.3	0.2				0.5
103-90-010	Sarkar	76			6.6		28.9	6.6		13.2	39.5			5.3					
106-10-034	Luck	70			57.1		15.7	1.4		20.0	4.3			1.4					
106-41-010	Salmon Bay	2,092			7.6	0.1	7.6	1.3		72.9	3.1	<0.1	0.1	6.4	0.9				
106-44-060	Petersburg	484			0.6		4.8	2.1		65.7	2.3			24.4					0.2
107-30-030	Thoms	387					6.5	11.6		25.6	30.2	1.3		19.9	4.1	0.3			0.5
108-80	Stikine River																		
108-80-003	Iskut	53		5.7		9.4	30.2			47.2	3.8			3.8					
108-80-035	Scud	75		1.3		2.7	14.7			78.7	1.3			1.3					
108-80-061	Chutine L.	17					35.3			52.9	5.9			5.9					
108-80-110	Tahltan	797					1.3			86.0	1.7		0.1	10.5					0.3
109-52-035	Kutlaku	493	0.2		14.6		18.1	0.4		64.7	0.2			1.6			0.2		
109-62-013	Alecks L.	557			5.4	0.4	11.7	0.5		71.1	4.5			6.5					
111-15-020	Windfall	75					5.3			94.7									
111-32-032	Taku (Canyon Is.)	2,987	0.9	0.8	5.2	9.7	18.0	1.5	0.2	56.3	3.0		0.1	4.3				<0.1	
111-32-066	Yehring Cr.	92		2.2	14.1	4.3	12.0			58.7				8.7					
111-32-201	S. Fork Slough	14		7.1	7.1	64.3	14.3			7.1									
111-32-203	Tuskwa Slough	56	1.8	12.5	3.6	53.6	16.1			10.7				1.8					
111-32-204	Coffee's Slough	35		2.9	2.9	45.7	20.0			20.0	2.9			5.7					
111-32-207	Chum Salmon Sl.	112		2.7	1.8	47.3	12.5			33.9				1.8					
111-32-220	Nakina River (Kuthai Lake origin)	26			7.7	7.7	23.1			57.7				3.8					
111-32-222	Nakina River	36					13.9			77.8	8.3								
111-32-235	Kuthai Lake	98					52.0			45.9			1.0	1.0					
111-32-245	L. Trapper L.	714			0.2		11.8			78.6	0.6			8.8					
111-32-254	L. Tatsamenie Lake	321		0.9		18.4	9.3			61.1	3.1			7.2					
111-32-260	Hackett R.	401		3.2	0.5	49.9	3.7			41.6	0.2			0.7					
111-33-034	Speel	1,341				1.2	3.9			93.3	0.1			1.6					
111-35-006	Crescent	2,548				1.4	0.4			91.3	0.3		0.5	6.1					<0.1
111-50-042	Auke	181						3.9		6.6	5.5			83.4					0.6
111-50-056	Steep	263			1.1	1.1	5.7	1.1		84.4	0.4			5.7					0.4
112-12-027	Kook	372								99.2			0.3	0.5					
113-41-043	Redoubt	1,059			0.7		24.5	14.9		19.0	12.7			27.8				0.2	0.1
113-59-004	Sitkoh	495			1.2		36.0	0.4		58.0	3.2		0.2	1.0					
113-73-003	Ford Arm	504			14.5		43.3	6.7		20.8	8.5		0.2	5.6					0.4
115-24-020	Lace	133				32.3	4.5			62.4				0.8					
115-32-032	Chilkat L.	1,461			1.5		1.9	3.2		24.1	36.0			32.4	0.7			<0.1	0.1
115-32-062	Chilkat R.	51		9.8		9.8	3.9			74.5				2.0					
115-33-020	Chilkoot	2,207					8.3			66.0	2.2		0.3	23.0				0.1	0.1

Table 20. Average length of sockeye salmon in escapements in Southeast Alaska and transboundary river systems, 1987.

Statistical Code	System	Brood Year and Age Class				
		1983		1982		1981
		0.3	1.2	1.3	2.2	2.3
101-30-075	Hugh Smith		523	595	519	588
101-80-070	McDonald		477	598	517	599
101-90-050	Heckman (Naha)	620	551	611	555	610
101-90-084	Helm		482	534	490	538
102-30-067	Kegan		502	569	510	580
102-60-087	Karta	602	545	602	548	601
103-15-027	Klakas		516	578	498	572
103-25-047	Hetta		468	565		548
103-60-047	Klawock		511	573	515	555
103-90-014	Sarkar		487	570	490	548
106-10-034	Luck		443	557	457	590
106-41-010	Salmon Bay	570	475	590	493	584
106-44-060	Petersburg		446	580	462	582
107-30-030	Thoms		515	588	520	580
108-80	Stikine River					
108-80-003	Iskut	590	459	575	488	579
108-80-035	Scud	578	488	587	485	574
108-80-061	Chutine L.		483	573	551	580
108-80-110	Tahltan		503	601	512	597
109-52-035	Kutlaku		458	543	505	540
109-62-013	Alecks L.	533	455	556	464	539
111-15-020	Windfall		456	576		
111-32	Taku River					
111-32-032	Canyon Is.	586	463	591	494	593
111-32-066	Yehring Cr.	587	459	583		583
111-32-201	S. Fork Slough	568	503	560		
111-32-203	Tuskwa Slough	565	454	581		600
111-32-204	Coffee Slough	603	425	593	435	578
111-32-207	Chum Salmon Sl.	570	454	589		575
111-32-220	Nakina River (Kuthai Lake origin)		470	578	478	
111-32-235	Kuthai Lake		494	516		475
111-32-245	L. Trapper L.		449	581	467	582
111-32-254	L. Tatsamenie L.	580	485	583	510	589
111-32-260	Hackett R.	590	434	591	404	606
111-33-034	Speel	592	467	590	460	585
111-35-006	Crescent	577	460	582	457	583
111-50-042	Auke			580	481	561
111-50-056	Steep	598	428	568	510	557
112-12-025	Kook			576		570
113-41-043	Redoubt		503	573	510	561
113-59-004	Sitkoh		482	549	475	552
113-73-003	Ford Arm		496	559	499	558
115-24-020	Lace	584	492	591		640
115-32-032	Chilkat L.		509	598	534	600
115-32-062	Chilkat R.	583	438	580		585
115-33-020	Chilkoot		469	583	472	583

Table 21. Sockeye salmon run timing through weirs in Southeast Alaska and transboundary river systems, 1987.

System	Dates of Operation	Count	Cumulative % Past Weir			Mean Date[a]	Standard Deviation[b]
			10%	50%	90%		
Hugh Smith	6/8-10/4	32,978	7/2	8/4	8/31	8/8	20.0
Naha	6/23-9/15	19,849	7/10	8/17	9/2	8/13	18.2
Karta	6/23-9/16	5,888	6/29	7/13	8/31	7/23	22.5
Klawock	6/27-11/13	7,763	9/4	9/11	9/19	9/10	10.6
Salmon Bay	6/25-9/16	12,666	7/18	8/31	9/6	8/18	20.6
Tahltan	7/15-8/27	6,958	7/25	8/4	8/13	8/4	7.2
Trapper	7/15-9/8	12,007	8/14	8/16	8/23	8/17	4.2
L. Tatsamenie	8/3-9/26	2,794	8/19	8/25	9/19	8/30	11.0
Hackett	8/15-10/12	910	8/25	8/31	9/22	9/6	12.1
Speel	7/15-8/27	9,353	7/28	8/12	8/16	8/10	7.4
Crescent	7/12-8/28	7,839	7/23	8/3	8/15	8/4	9.2
Auke	6/1-9/9	2,829	7/15	7/30	8/28	8/4	19.3
Redoubt	6/27-8/20	13,502	7/9	8/2	8/14	7/30	12.8
Chilkat	6/18-11/20	48,593	7/15	9/20	9/28	8/30	31.0
Chilkoot	6/4-10/18	95,185	6/22	7/28	8/23	7/27	23.5

[a] Rounded to nearest calendar date.

[b] Standard deviation of mean timing date.

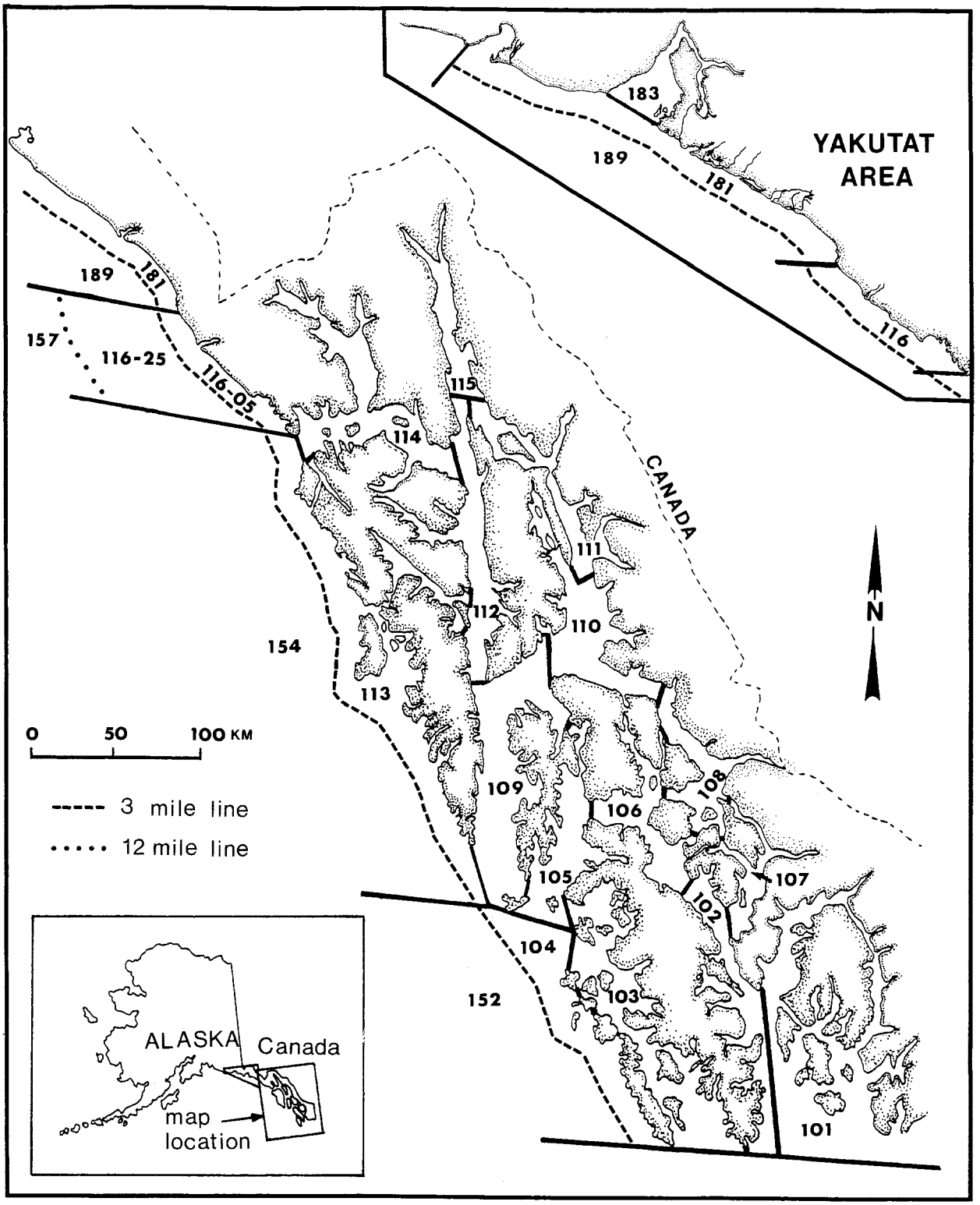

Figure 1. Map of Southeast Alaska showing the statistical fishing districts.

APPENDICES

Appendix A.1 Numbered calendar weeks (i.e., statistical weeks) used to report commercial catches, 1987.

Week Number	From	To	Week Number	From	To
1	Jan 1	Jan 3	28	Jul 5	Jul 11
2	Jan 4	Jan 10	29	Jul 12	Jul 18
3	Jan 11	Jan 17	30	Jul 19	Jul 25
4	Jan 18	Jan 24	31	Jul 26	Aug 1
5	Jan 25	Jan 31	32	Aug 2	Aug 8
6	Feb 1	Feb 7	33	Aug 9	Aug 15
7	Feb 8	Feb 14	34	Aug 16	Aug 22
8	Feb 15	Feb 21	35	Aug 23	Aug 29
9	Feb 22	Feb 28	36	Aug 30	Sep 5
10	Mar 1	Mar 7	37	Sep 6	Sep 12
11	Mar 8	Mar 14	38	Sep 13	Sep 19
12	Mar 15	Mar 21	39	Sep 20	Sep 26
13	Mar 22	Mar 28	40	Sep 27	Oct 3
14	Mar 29	Apr 4	41	Oct 4	Oct 10
15	Apr 5	Apr 11	42	Oct 11	Oct 17
16	Apr 12	Apr 18	43	Oct 18	Oct 24
17	Apr 19	Apr 25	44	Oct 25	Oct 31
18	Apr 26	May 2	45	Nov 1	Nov 7
19	May 3	May 9	46	Nov 8	Nov 14
20	May 10	May 16	47	Nov 15	Nov 21
21	May 17	May 23	48	Nov 22	Nov 28
22	May 24	May 30	49	Nov 29	Dec 5
23	May 31	Jun 6	50	Dec 6	Dec 12
24	Jun 7	Jun 13	51	Dec 13	Dec 19
24	Jun 14	Jun 20	52	Dec 20	Dec 26
26	Jun 21	Jun 27	53	Dec 27	Dec 31
27	Jun 28	Jul 4			

Appendix A.2. Sample size needed to describe the age composition of a three, four, five, six, or seven-age class population of increasing size with a precision of ± 5% and a probability of 0.10.

	Sample Size Needed With The Following Number of Groups[a]					
Population Size	2	3	4	5	6	7
500	218	238	251	261	267	273
1,000	278	312	334	352	364	376
1,500	307	349	376	399	414	429
2,000	323	370	401	427	445	462
2,500	334	384	418	446	466	485
3,000	341	394	430	460	481	501
3,500	347	402	439	470	492	513
4,000	351	408	446	478	501	523
4,500	355	412	452	485	508	530
5,000	358	416	456	490	513	537
6,000	362	422	463	498	522	546
7,000	365	426	468	504	529	554
8,000	367	430	472	509	534	559
9,000	369	432	476	512	538	563
10,000	371	434	478	515	541	567
15,000	375	441	486	524	551	578
20,000	378	444	490	529	556	583
25,000	379	446	492	531	559	587
30,000	380	447	494	533	561	589
35,000	381	448	495	535	563	591
40,000	381	449	496	536	564	592
45,000	382	449	496	537	565	593
50,000	382	450	497	537	566	594
60,000	383	451	498	538	567	595
70,000	383	451	498	539	567	596
80,000	383	451	499	539	568	597
90,000	383	452	499	540	568	597
100,000	384	452	499	540	569	597
infinite	385	454	502	543	572	601

[a] Based on Cochran (1977) using the following formula:

$$n' = \frac{n_o}{1 + \frac{(n_o - 1)}{N}}$$

Where: n' = adjusted sample size
n_o = sample size needed for an infinitely large population
N = population size

Appendix B.1. Age composition of sockeye salmon in the commercial gill net harvests in Southeast Alaska by district, 1981 to 1987.

				Percent by Age Class																
District	Year	Catch	Sample Size	0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	1.5	2.4	3.3	4.2	4.3
101	1981	104853	162					44.4			19.8	29.0			6.8						
	1982	233702	3082		0.1			6.3	<0.1		67.8	20.1			5.7	<0.1		<0.1			
	1983	136006	5649		<0.1	<0.1	0.4	13.1			41.3	25.9		0.2	18.9	0.1					
	1984	88226	5904		0.1		1.6	13.2			38.6	32.5		<0.1	14.0	<0.1					
	1985	223744	7181		0.1	<0.1	1.9	14.8	<0.1	<0.1	49.0	19.5		0.1	14.4	<0.1					
	1986	145631	6511		0.2	<0.1	0.4	15.0			41.1	27.5		0.1	15.3	0.2			0.1		
	1987	107580	6001	<0.1	0.1	0.2	1.5	8.4	0.1		52.7	27.5			9.3	0.1		<0.1	0.2	<0.1	
106	1982	193618	2497				0.2	3.1	<0.1		83.8	3.9		0.1	8.8				<0.1		
	1983	48942	5272		0.1	0.1	0.4	16.0			63.1	9.3		0.4	10.6			<0.1			
	1984	91789	6316		<0.1	<0.1	0.3	24.2	<0.1		53.8	10.3			11.4						
106-30	1985	92979	6095		<0.1	<0.1	0.7	6.1	0.1		78.0	6.1	<0.1	0.2	8.8	<0.1		<0.1	<0.1		
	1986	60462	4537		<0.1	<0.1	0.5	13.9	<0.1		54.7	13.3		0.3	17.0	0.1		0.1	<0.1		
	1987	57262	4372				0.2	8.7	0.1		63.2	8.0		0.1	19.4	0.1		0.1	0.1		
106-41	1985	172088	5978			<0.1	0.5	6.7			78.3	4.5		0.1	9.8	<0.1	<0.1	<0.1	<0.1		
	1986	85243	5220				0.3	13.5			56.5	12.6		0.5	16.3	0.1		0.1	<0.1		
	1987	79165	5097		0.1	<0.1	0.8	8.6	<0.1		65.8	7.9		0.2	16.2	0.3	<0.1	<0.1	0.1		
108	1982	6553	792				0.3	2.9		0.1	81.3	2.1			13.3						
	1983	187	11					18.2			27.3				54.5						
	1984	1290	657		0.2		8.2	3.5			82.3	0.6			5.2						
	1985	1066	448		0.2		6.3	7.4		0.2	81.7	0.7		2.5	1.1						
	1986	4187	1378		0.4		6.3	4.8			83.5	1.6		0.2	3.2						
	1987	1620	92				10.9	6.5			68.5	2.2			12.0						
108	1979	10534	98		1.0		3.1	28.6			60.2	5.1			2.0						
CAN	1980	18119			0.9	0.5	9.2	31.0			53.4	1.9		0.4	2.7						
Stikine	1981	21551	663				9.6	3.6			82.4	1.8			2.6						
	1982	15397	964			0.1	2.3	15.3			69.6	1.7			11.0						
	1983	15857	2035		0.7		1.1	12.1		0.1	78.7	1.8		0.2	5.3						
	1985	17093	3212		0.4	<0.1	3.9	5.3	<0.1	<0.1	84.4	1.3		0.3	4.2	<0.1		<0.1	0.1		
	1986	12411	1841		1.1	0.1	1.7	11.2			77.5	2.8		0.2	5.4						
	1987	6138	2206		1.5	0.2	8.6	17.4	<0.1		61.9	2.6		0.4	7.1	<0.1		<0.1	0.1		
111	1981	49942	1400		0.4	0.1	1.8	7.4		<0.1	81.1	2.5		0.5	6.2						
	1982	83479	2899		0.1		2.6	11.9		<0.1	75.4	2.9		0.2	6.8	<0.1			<0.1		
	1983	31627	5168		0.2		6.4	7.6	<0.1	0.1	68.8	5.7		0.3	10.9			<0.1	<0.1		
	1984	77329	5534		0.2	<0.1	12.3	4.4		<0.1	73.0	4.6		0.3	5.1			0.1	<0.1		
	1985	88192	6659		1.3	0.1	5.0	5.6	<0.1	0.5	71.8	3.6		0.7	11.3			0.1			
	1986	68836	6683		0.5	<0.1	12.8	11.3	<0.1	0.1	61.5	1.4		0.3	11.9	<0.1		0.1	0.1		
	1987	75035	5635		0.1		10.2	4.7	<0.1	<0.1	76.5	1.2		0.2	7.1	<0.1		<0.1	<0.1		
111	1981	10922	663		0.6	0.3	2.5	11.4		0.1	72.3	4.7		0.7	7.4						
CAN Taku	1983	17056	1626		0.5		10.3	11.9			64.9	6.3		0.1	6.0				<0.1		
	1984	27242	1551		1.1		15.5	6.8		<0.1	65.4	6.3		0.1	4.8						
	1985	14244	742		3.3		5.2	9.5	0.1	0.4	69.9	3.5		0.8	7.2			0.1			
	1986	14739	1225		2.2	0.1	14.3	10.8		0.2	61.0	0.9		0.1	10.4						
	1987	13554	1053		0.6	0.1	20.1	7.3	0.2	0.2	66.1	1.0		0.1	4.3	0.1					
115	1981	93195	3665		0.1		1.1	2.6	0.1		53.9	12.3		0.1	29.3	0.1		0.1	0.5		0.1
	1982	273536	5346				0.3	5.0		<0.1	56.7	11.5		0.3	25.7	0.2			0.4		
	1983	369311	10575		<0.1	<0.1	1.1	2.7		<0.1	55.1	7.2		0.2	33.6	0.1		<0.1	<0.1		
	1984	334373	11660		<0.1		1.3	1.8			76.1	8.0		0.1	12.6	<0.1		0.1	<0.1		
	1985	304006	10568		0.1	<0.1	0.8	3.0	<0.1	<0.1	51.2	8.4		1.0	35.2	0.1		0.1	<0.1		
	1986	290205	10606		0.2		1.8	3.6		<0.1	35.7	17.9		0.2	39.7	0.7		0.1	0.1		
	1987	415815	11426		<0.1	<0.1	1.5	5.0		<0.1	61.4	5.1		0.1	26.6	0.1		0.1	0.1		

Appendix B.2. Age composition of sockeye salmon in the commercial purse seine harvests in Southeast Alaska by district, 1981 to 1987.

District	Year	Catch	Sample Size	Percent by Age Class														
				0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	1.5	2.4	3.3
101	1982	73817	1486			0.1		13.5			76.0	7.1			3.3				
	1983	47912	1847			0.1	0.4	35.7	0.5		45.3	9.7		0.2	8.0	0.1			<0.1
	1984	81654	3440		0.1	0.9	0.3	30.1	0.7		41.2	16.1		0.1	10.5				
	1985	125638	4049		<0.1	0.5	0.2	15.3	0.6	<0.1	58.7	11.3		0.5	12.5			0.1	
	1986	74745	4538		0.2	0.2	0.2	23.2	0.2	<0.1	45.0	16.2	<0.1	0.3	14.0	0.3	<0.1	<0.1	<0.1
	1987	43329	2620		<0.1	0.9	0.5	9.9	0.3		66.4	11.8		0.3	9.7	0.1		<0.1	
102	1982	22747	772			0.1		20.2	0.4		51.3	16.8			10.2	0.8			0.1
	1983	11123	749		0.1	0.7		42.7	0.4		38.7	8.4		0.4	8.6				
	1984	21417	1097			0.4	0.1	29.0	0.8		49.1	11.6		0.1	8.9				
	1985	34746	698			0.3	0.6	29.6			55.1	10.7		0.1	3.6				
	1986	32684	699		0.1	0.4	0.1	32.9	0.2		35.0	21.1		0.4	9.8	0.2			
	1987	17476	1335		0.1	0.5	0.5	16.8	0.5		53.2	8.7		0.2	19.0				0.5
104	1981	288548	342		0.3	0.3	0.3	64.3			21.9	11.1			1.8				
	1982	285231	2365		<0.1			15.4	0.1	0.1	73.3	7.3		<0.1	3.6	<0.1		<0.1	<0.1
	1983	650807	6566		0.1	0.5	0.2	39.6	0.1	<0.1	45.8	8.2		<0.1	5.4	<0.1			
	1984	293668	4558		0.1	0.4	0.3	50.8	0.1		33.4	11.4			3.4	0.1			
	1985	431575	4576		0.1	0.2	0.2	22.7	0.3	<0.1	64.2	7.1			5.1	0.1			<0.1
	1986	443990	6507		<0.1	0.4	0.2	31.5	0.3		46.8	10.2		0.2	10.1	0.1	<0.1	<0.1	<0.1
	1987	171214	3878		0.2	4.3	0.3	23.3	1.1		53.3	9.8		0.1	7.7	<0.1			0.1
112	1982	26387	1529		0.3	0.8	0.6	31.8	0.2		21.6	18.2		0.2	26.3				
	1983	25940	2262		0.4	<0.1	9.2	26.7	0.1		47.8	11.4			4.5	<0.1			
	1984	22295	2620		0.2	<0.1	4.6	6.6	0.1	<0.1	57.0	20.5		<0.1	10.8	0.1			0.1
	1985	37121	1969		1.0	0.9	4.3	12.3	0.6	0.5	34.2	22.1	0.1	0.4	23.3	0.1		0.2	
	1986	8377	754		0.5	0.2	6.8	27.4			34.3	11.4		0.3	18.5	0.6			
	1987	44766	2853	<0.1	0.3	0.6	8.3	8.2	0.5	0.1	61.6	6.6		0.3	13.1	<0.1		<0.1	0.2
113-34	1982		764					1.4	0.1			76.2		0.1	0.9	21.3			
	1983	15736	348								20.4	75.9				3.7			
	1984	15105	801					27.2	0.2		0.4	72.0	0.1		0.1				
	1985	2348	362					10.8				79.5				9.7			
	1986	4097	259			0.4		10.0	0.8			84.2	0.4		0.8	3.5			
	1987	4813	411					3.9	1.9			92.7	1.0		0.2	0.2			

Appendix B.3. Age composition of sockeye salmon in selected escapements to Southeast Alaska, 1981 to 1987.

System	Stream Number	Year	Sample Size	Percent by Age Class															
				0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	1.5	2.4	3.3
Hugh	101-30-075	1981	1137			1.6		46.1			30.0	11.6			10.7				
Smith		1982	3009				0.0	2.9			90.5	1.6			5.0				
Lake		1983	1107			0.1	0.2	13.8	0.1		51.4	5.4		2.0	27.0				
		1984	1591			0.1		7.4			62.7	3.8			26.0				
		1985	1170					0.8	0.1		70.5	0.6		0.5	26.3			0.2	1.0
		1986	1934		0.1	0.2		65.5			11.6	18.0		0.6	4.0		0.1		
		1987	3888			0.5		1.9	0.4		88.7	3.1		0.1	5.2	0.1			0.2
McDonald	101-80-068	1981	745			0.4		3.3			74.6	2.2			19.2				0.3
Lake		1982	629			0.3		4.8	0.3		73.4	8.6		0.2	12.4				
		1983	1366				0.2	34.9	0.1		19.5	3.3			42.0				
		1984	929			0.1	0.1	14.6			67.8	6.4			11.0				
		1985	537					4.6			72.3	8.7			14.2				0.2
		1986	564				0.2	11.7	0.5		56.2	3.7			27.7				
		1987	835			0.4		7.7	0.8		59.6	2.2			29.2	0.1			
Karta	102-60-087	1981	355			0.6		31.3			58.3	1.7			7.3	0.3			0.6
River		1982	1429					5.0			92.4	1.7		0.1	0.8				
		1983	921					2.5			85.2	2.5		0.1	9.7				
		1984	224			3.6		12.9	0.9		74.1	3.1			5.4				
		1985	1851					1.9			81.1	1.1		0.3	15.5	0.1		0.1	
		1986	446					4.0			78.7	1.6		0.9	14.4			0.4	
		1987	3534				0.2	5.1			85.7	1.4		0.2	7.4	<0.1		<0.1	0.1
Sarkar	103-90-014	1982	538					20.4			38.9	37.9			2.6				0.2
Lake		1983	140					35.0			19.3	30.0			15.7				
		1984	316			1.3		63.6	2.8		14.9	13.0			4.1	0.3			
		1985	457			1.5		7.9	3.1		38.3	29.1			16.8	1.3			2.0
		1986	371			1.3		33.4	1.3		5.4	51.5			6.7	0.3			
		1987	76			6.6		28.9	6.6		13.2	39.5			5.3				
Salmon	106-41-010	1981	315			0.3		8.9	0.6		85.7	1.9		0.3	2.3				
Bay		1982	1302			1.4		15.4	0.1		74.1	6.6		0.1	2.3				
Lake		1983	527			12.0		34.1	0.6		38.9	6.8			7.6				
		1984	592			0.3		48.4			50.3	0.2			0.8				
		1985	1342			0.5		6.5	0.1		84.3	1.9			6.7				
		1986	1257		0.1	0.1		25.1	0.1		60.6	5.6		0.7	7.3				
		1987	2092			7.6	0.1	7.6	1.3		72.9	3.1	<0.1	0.1	6.4	0.9			
Tahltan	108-80-110	1981	914					4.9			92.0	1.8			1.3				
Lake		1982	441					4.1			78.0	0.2		0.2	17.5				
		1983	1885			0.0		2.2			91.2	0.1		0.1	6.4				
		1984	1928					33.3			60.6	1.2		0.1	4.8			0.0	
		1985	2307					2.4			95.4	0.3			1.9				
		1986	719					1.0			89.9	1.1			8.0				
		1987	797					1.3			86.0	1.7		0.1	10.5				0.3

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System	Stream Number	Year	Sample Size	Percent by Age Class															
				0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	1.5	2.4	3.3
Taku	111-32-032	1983	1297		0.1		5.3	12.3			66.7	7.8		0.2	7.6				
River		1983	277		1.8		7.2	36.5			42.2	6.1			5.8				0.4
Canyon		1984	1579	0.2	2.3	1.0	10.5	16.3	0.0	0.2	60.5	6.6		0.2	2.2				
Island		1985	2436	0.3	5.7	3.9	3.8	17.1	0.4	0.3	54.2	8.7		0.7	4.8			0.1	
		1986	3389		2.8	0.5	7.8	28.8	0.1		50.2	2.1		0.3	7.5				
		1987	2987	0.9	0.8	5.2	9.7	18.0	1.5	0.2	56.3	3.0		0.1	4.3			<0.1	
Kuthai	111-32-235	1981	265					11.3			86.4	0.8			1.5				
Lake		1982	219					21.4			73.1				5.5				
		1983	486					1.7			96.5	0.8			1.0				
		1984	242					50.8			47.5				1.7				
		1986	73					57.5			38.4	2.7			1.4				
		1987	26			7.7	7.7	23.1			57.7				3.8				
Little	111-32-245	1981	272			1.5		8.1			85.7	4.0			0.7				
Trapper		1982	611			0.3	0.2	8.5			75.2	1.6			14.2				
Lake		1983	639			0.9		50.9			29.0	0.9			18.3				
		1984	1323					5.1			91.3	2.5		0.2	0.9				
		1985	1416					14.4			74.8	3.6		0.9	6.3				
		1986	671				0.1	5.5			77.5	1.3			15.5				
		1987	714			0.2		11.8			78.6	0.6			8.8				
Speel	111-33-034	1981	187			25.1		21.9			50.8	1.6			0.5				
Lake		1982	312			3.5		55.5			39.8			0.3	0.9				
		1983	793		0.4	1.3	0.3	24.3	0.0		70.3	1.2		0.0	2.2				
		1984	765				1.7	41.4			54.9	1.0			1.0				
		1985	396			7.6		23.7			66.9	1.0		0.3	0.5				
		1986	872		0.2		0.2	47.6			48.1	0.8		0.1	3.1				
		1987	1341				1.2	3.9			93.3	0.1			1.6				
Crescent	111-35-006	1981	458			13.5		15.3	0.4		60.7	0.7			9.4				
Lake		1982	323			2.5		40.3	0.9		52.6	2.8			0.9				
		1983	1684		2.7	2.3	0.4	62.3	0.0		20.2	3.6		0.0	8.5				
		1984	1140		0.1	0.1	4.0	9.9			81.1	0.9		0.4	3.3			0.2	
		1985	1303		0.2	0.1	1.3	5.9		0.6	83.2	1.4		2.9	4.2			0.1	0.1
		1986	826		0.2		0.4	15.7		0.1	73.2	0.9		0.7	8.7				
		1987	2548				1.4	0.4			91.3	0.3		0.5	6.1				<0.1
Chilkat	115-32-032	1981	597			0.2		3.0	0.3		52.4	7.9			35.8				0.3
Lake		1982	1632			0.4	0.1	1.9	2.7		9.8	47.7			35.8	1.5			0.1
		1983	2862			0.8		3.0	3.1		31.6	33.1		0.0	28.1	0.2		0.0	0.1
		1984	2728			0.1	0.0	1.6	1.5		22.7	53.5		0.1	20.2	0.2		0.0	0.0
		1985	1332			0.8		0.7	3.5		11.1	38.8	0.2	0.3	44.3	0.4			
		1986	940					6.2	1.0		3.5	24.9			62.2	1.6			0.5
		1987	1461			1.5		1.9	3.2		24.1	36.0			32.4	0.7		<0.1	0.1
Chilkoot	115-33-020	1981	1186			0.0		10.4			80.2	1.7		0.3	7.4				
Lake		1982	1691				0.2	19.2			78.1	0.5		1.0	1.0				
		1983	1791			0.1		12.5	0.1		60.8	1.4		0.2	24.9				
		1984	1902					4.6			85.5	0.4		1.0	8.5				
		1985	1622			0.1		12.1			66.6	2.6		2.4	15.8	0.1		0.3	
		1986	2147			0.1		12.9			67.2	2.4		0.6	16.7			0.1	0.1
		1987	2207					8.3			66.0	2.2		0.3	23.0			0.1	0.1

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